Bid Documents
Volume II of II - Appendices

Spokane County Project No. 93-069

Construction
Colbert Landfill Remedial Action Project
Spokane, Washington

Spokane County
Spokane, Washington

June 7, 1993

LANDAU ASSOCIATES, INC.
Environmental and Geotechnical Services
P.O. Box 1029
Edmonds, WA 98020-9129
(206) 778-0907

In Association with:

Sverdrup Corporation
P.O. Box 97062
Kirkland, WA 98083-9762
(206) 822-3300

Taylor Engineering, Inc.
West 106 Mission Avenue, Suite 206
Spokane, WA 99201
(509) 328-3371

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Construction
Colbert Landfill Remedial Action Project
Spokane, Washington

Spokane County Project No. 93-069

June 7, 1993

Prepared for

Spokane County
Spokane, WA

Prepared by

Landau Associates, Inc.
P.O. Box 1029
Edmonds, WA 98020-9129
(206) 778-0907

In Association with

Sverdrup Corporation
P.O. Box 97062
Kirkland, WA 98083-9762
(206) 822-3300
and
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West 106 Mission Avenue, Suite 206
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APPENDIX A

Project Consent Decree

MAR 15 1989

UNITED STATES DISTRICT COURT
EASTERN DISTRICT OF WASHINGTON

THE STATE OF WASHINGTON, DEPARTMENT OF ECOLOGY AND THE UNITED STATES OF AMERICA ON BEHALF OF THE U.S. ENVIRONMENTAL PROTECTION AGENCY,

Plaintiffs,

v.

COUNTY OF SPOKANE AND KEY TRONIC CORPORATION,

Defendants.

C-89-033-RJM

NO.

CONSENT DECREE

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7th Floor, Highways-Licenses Building
PB 71
Olympia, WA 98504-8071
(206) 753-6200

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I. AGREEMENT OF PARTIES

The parties agree that:

A. The State of Washington and the United States of America are filing the complaint in this action simultaneously with the Consent Decree. The Plaintiffs in the complaint seek (1) an injunction requiring the Defendants to abate the release or threat of release of hazardous substances from the Site ("Site"), as hereafter defined, and to remedy hazardous conditions presented to the public health, welfare and the environment by the Site, and (2) reimbursement of response costs incurred or to be incurred by the United States or the state in connection with the Site as reduced by the the mixed funding to be provided by the Government as provided in Section XVII;

B. The relief sought against the Defendants would require remedial actions as provided for in the Record of Decision ("ROD") signed on September 29, 1987 by the Regional Administration, Region 10, the United States Environmental Protection Agency;

C. The Defendants deny any legal or equitable liability under any statute, regulation, ordinance or common law for damages caused by the generation, handling, storage, treatment, transportation, or disposal of hazardous substances at the Site;

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D. This Consent Decree, the entry hereof, and compliance herewith shall not be admissible in any judicial or administrative proceeding and shall not be an admission of any fact dealt with herein or an admission of liability for any purpose; the Consenting Parties retain the right to controvert in any subsequent proceeding, other than in proceedings to enforce this Consent Decree, the validity of or the responsibility for any of the factual or legal determinations made herein;

E. To accomplish the objectives set forth in this Consent Decree the parties have agreed that it is in the public interest and in the interest of the parties for this case to be resolved without litigation, before the taking of any testimony and without the admission of any issue of fact or law;

F. The obligations of Key Tronic Corporation under this Consent Decree and with respect to remedial action at the Colbert Landfill Site are limited to tender of the payments specified under Paragraph A of Section VIII consistent with Sections XIX, XXV, and XXX. The obligations of the United States Air Force are dealt with pursuant to a separate consent agreement with the Government Plaintiffs.

G. As provided in Section 113(f) of CERCLA, 42 U.S.C. § 9613(f) and RCW 70.105B.070(6), Key Tronic and the County shall

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not be liable for claims for contribution regarding matters addressed in this Consent Decree;

H. By entering into this Consent Decree, the parties do not intend to discharge nonsettling persons from any liability they may have with respect to matters alleged in the complaint; and

I. Plaintiffs and Defendants, by their representatives, have agreed to this Consent Decree;

NOW, THEREFORE, it is ORDERED as follows:

II. JURISDICTION AND VENUE

A. This Court has subject matter jurisdiction over this matter pursuant to 28 U.S.C. §§ 1331 and 1345, 42 U.S.C. §§ 6901 et seq., 42 U.S.C. §§ 9601 et seq., ch. 70.105 RCW, ch. 90.48 RCW, and ch. 70.105B RCW and personal jurisdiction over the signatories consenting hereto. Each signatory submits itself to the jurisdiction of the Court for all matters relating to this Consent Decree.

B. The parties stipulate that venue in this court is proper pursuant to 42 U.S.C. § 9613(b) and request that a single judge be assigned to decide all issues arising out of this Consent Decree.

C. The parties further stipulate that, by agreeing to the exercise of pendent jurisdiction over issues arising under state law, no rights or claims which may be available to the

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County and Key Tronic under the Hazardous Waste Cleanup Act are waived and such rights may be adjudicated by this Court or, if this Court declines jurisdiction, the appropriate state court.

III. STATEMENT OF FACTS

The Colbert Landfill is a Spokane County-owned sanitary landfill that was operated from 1968 through 1986. The Colbert area is in northeastern Washington, in Spokane County, approximately 15 miles north-northeast of Spokane, Washington. The landfill covers 40 acres and is located about 2.5 miles north of the Town of Colbert and a half mile east of U.S. Highway 2 (Newport Highway) in the northwestern quadrant of the intersection of Elk-Chattaroy, Yale, and Big Meadows Roads. It is situated in the southeast corner of Section 3, Township 27 North, Range 43 East, W.M., see Appendix A. The landfill received both municipal and commercial wastes up to 1986. It is now filled to capacity, and is no longer receiving waste.

The remedial action site, the area of potential impact surrounding and including the landfill, extends north of the landfill about a half mile, west about a mile to the Little Spokane River, east a similar distance, and south approximately five miles to Peone (or Deadman) Creek. The total area is approximately 6,800 acres which includes parts of Sections 2, 3, 10, 11, 14, 15, 16, 21, 22, 23, 26, 27, 28, 33, 34, and 35 of the same township and range. The site is entirely within

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the drainage basin of the Little Spokane River, mainly on a plateau bounded by bluffs down to the river on the west and knobby granite and basalt hills to the east.

Colbert Landfill had been operated as a sanitary landfill by the Spokane County Utilities Department since it was opened in September 1968 to its cessation of operations in October 1986. During the five years from 1975 to 1980, a local electronics manufacturing company, Key Tronic Corporation, used the Colbert landfill to dispose of spent organic solvents, mainly methylene chloride (MC) and 1,1,1-trichloroethane (TCA). Hazardous substances detected in ground water at the Site were also disposed of by a variety of other persons, including Alumax Irrigation Products, A&M Manufacturing and United Paint, Inc. During the same period a nearby military facility, Fairchild Air Force Base, also disposed of various solvent wastes at the site. A variety of other chemicals (such as pesticides and refinery tar residues) from other sources were also disposed at the site but have not, to date, been detected in the groundwater at the site.

In 1980 nearby residents complained to the Eastern Regional Office of the Washington Department of Ecology (Ecology) about these disposal practices. State and county officials, under the lead of the Spokane County Utilities Department, initiated an investigation into complaints of

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groundwater contamination in the area by sampling nearby private wells of which some were found to be contaminated with solvents. Subsequently, the County and Key Tronic instituted and continued a well sampling plan to protect the interests of local residents.

In the following years, a number of studies have been directed toward the contamination problem at the Colbert Landfill. The original investigation, which was initiated in response to citizen complaints, was conducted by George Maddox and Associates.

The United States Environmental Protection Agency ("EPA"), pursuant to Section 105 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 ("CERCLA"), 42 U.S.C. § 9605, placed the Colbert Landfill Site in August, 1983 (the "Site" as specifically defined in Section IV of this Consent Decree) on the National Priorities List, which is set forth at 40 C.F.R. Part 300, Appendix by publication in the Federal Register on August 8, 1983, 47 Fed. Reg. 58470-58484 (1983).

In response to a release or a substantial threat of a release of a hazardous substance at or from the Site, the Ecology and EPA in August, 1984, commenced a Remedial Investigation and Feasibility Study ("RI/FS") pursuant to 40 C.F.R. 300.68 for the Site.

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The Remedial Investigation ("RI") Report was completed in May, 1987, and the Feasibility Study ("FS") Report was also completed in May, 1987. The FS Report contains a proposed plan for remedial action at the Site.

Six volatile organic chemicals, all chlorinated aliphatic hydrocarbons, were the main contaminants detected in the groundwater at the Colbert Landfill Site during the Remedial Investigation (Golder 1987). These contaminants, identified in this Decree as "constituents of concern" are: 1,1,1-Trichloroethane (TCA); 1,1-Dichloroethylene (DCE); 1,1-Dichloroethane (DCA); Trichloroethylene (TCE); Tetrachlroethylene (PCE); and Methylene Chloride (MC). Constituents of concern were detected at levels requiring remedial action in both upper and lower aquifers.

On January 8, 1988, EPA, pursuant to Section 122 of CERCLA, 42 U.S.C. § 9622, notified the County and Key Tronic that the EPA determined each party to be a potentially responsible party ("PRP") regarding the proposed remedial action at the Site. Subsequently, Ecology has determined each party to be a potentially liable person (PLP) as defined by RCW 70.105B.020(9).

EPA's decision on the final remedial action plan is embodied in a document called a Record of Decision ("ROD"), issued September 29, 1987.

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Pursuant to Section 121(d)(1), EPA, the state, Spokane County and Key Tronic ("the parties") have determined that the remedial action plan embodied in this Consent Decree will attain a degree of cleanup of hazardous substances, pollutants and contaminants released into the environment and of control of further release which at a minimum assures protection of human health and the environment at the Site.

The parties have determined that the remedial action plan embodied by this Consent Decree will provide standards of control for such hazardous substances, pollutants, or contaminants which at least attains legally applicable or relevant and appropriate standards, requirements, criteria, or limitations under Federal environmental law or state environmental or facility siting law in accordance with Section 121(d)(2) of CERCLA, 42 U.S.C. § 9621(d)(2); and will attain a degree of cleanup as provided in RCW 70.105B.060; and the remedial action plan is in accordance with Section 121 of CERCLA, 42 U.S.C. § 6921, and with the National Contingency Plan ("NCP"), 40 C.F.R. Part 300.

The County agrees to implement the final remedial action plan as set forth in Appendix B to this Consent Decree, and the Government Plaintiffs have determined that the work required under the Consent Decree will be done properly by the County,

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and that the County is qualified to implement the remedial action.

The parties recognize, and intend to further hereby, the public interest in the expedition of the cleanup of the Facility and avoiding prolonged and complicated litigation between the parties.

NOW, THEREFORE, it is hereby Ordered, Adjudged and Decreed:

IV. DEFINITIONS

The following definitions shall apply to this Consent Decree, including the scope of work set forth in Appendix B:

A. ARAR means a federal or state standard, requirement, criterion, or limitation that is legally applicable or relevant and appropriate to cleanup of the Site as of the date of entry of this Consent Decree within the meaning of 42 U.S.C. § 9621(d) and RCW 70.105B.060.

B. CERCLA means the Comprehensive Environmental Response Compensation and Liability Act, 42 U.S.C. § 9601 et seq., as amended, also known as "Superfund."

C. Colbert Landfill Site ("Site") means the Site located in Spokane County, and described in the September 29, 1987 ROD. See also, Appendix A. The Site includes (1) the approximately 40-acre landfill operated from 1968 to 1986; and (2) any

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portions of other properties that contain hazardous substances as a result of landfill operations at the landfill.

D. Constituents of Concern means such hazardous substances as are identified as major contaminants in the ROD; specifically, 1,1,1-Trichloroethane (TCA); 1,1-Dichloroethylene (DCE); 1,1-Dichloroethane (DCA); Trichlorethylene (TCE); Tetrachloroethylene (PCE); and Methylene Chloride (MC).

E. County or Spokane County means the County of Spokane, Washington.

F. Department of Ecology ("Ecology" or "state") means the State of Washington, Department of Ecology.

G. EPA means the United States Environmental Protection Agency.

H. Government Plaintiffs means the State of Washington on behalf of the Department of Ecology and the United States of America on behalf of EPA, acting alone or together.

I. Hazardous Substance means any hazardous substance as defined by CERCLA and dangerous waste, extremely hazardous waste and hazardous substances as defined by state law.

J. Hazardous Waste Cleanup Act means Washington Laws of 1987, Chapter 2, 3rd Ex. Session (S.B. 6085), as codified in ch. 70.105B RCW and elsewhere.

K. Key Tronic means Key Tronic Corporation.

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L. National Contingency Plan ("NCP") means the plan promulgated pursuant to CERCLA and codified at 40 CFR Part 300 et seq., as amended.

M. Parties means all parties who are signatories to the Consent Decree.

N. Remedial Action means all activities and work within the meaning of 42 U.S.C. § 9601(24) and specifically identified in this Consent Decree, including Appendix B, and all attachments thereto and plans and schedules thereunder, and all amendments to any of the above made in accordance with this Consent Decree. The Remedial Action includes, without limitation the following items described more fully in Appendix B: the pilot studies, further site characterization, and initiation of cleanup activities to be conducted in Phase I; the evaluation of Phase I results; the design of a final remedial action program to meet the Performance Standards as defined in Appendix B and implementation of such remedial action program to be conducted in Phase II; any modification to the Remedial Action as a result of the five-year review provided by Section XXV(B) or information developed in Phase I, including data relating to the extent of contamination, site hydrogeology, initial field pilot testing, technical feasibility, or implementability of the remedial options originally chosen, as provided on page I-3 of Appendix B; if

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identified to be necessary as provided in Appendix B, air stripping tower emissions abatement; closure of Colbert Landfill; domestic well monitoring; provision of alternative water supply; implementation of institutional controls; and, if the preferred remedy identified in the ROD is in whole or in part no longer feasible or cost-effective, design and implementation of any new alternative proposed by Spokane County as provided in Appendix B.

O. RCRA means the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 et seq.

All terms not specifically defined herein shall have the meaning as provided by CERCLA, 42 U.S.C. § 9601 et seq. and/or ch. 70.105B RCW.

V. PARTIES BOUND

This Consent Decree shall apply to and be binding upon the signatories, their successors and assigns. The undersigned representative of each party certifies that he or she is fully authorized to enter into the terms and conditions of this Consent Decree and to execute and legally bind such party to this document. The County shall provide a copy of this Consent Decree to each contractor or subcontractor retained to perform work contemplated by this Consent Decree and shall condition any contract for such work on compliance with this Consent Decree.

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VI. GENERAL PRINCIPLES

A. The Appendices to this Consent Decree and their Attachments are a part of this Decree, and the plans and schedules prepared as required in Appendix B and attachments thereto shall, upon their approval by the Government Plaintiffs, be incorporated in the Decree.

B. Except as provided in Section XXVII (Dispute Resolution) and Section XXX (Covenant Not to Sue) nothing in this Consent Decree shall be deemed to limit the response authority of the Government Plaintiffs under Section 104 of CERCLA, 42 U.S.C. § 9604, under Section 106 of CERCLA, 42 U.S.C. § 9606, or under the Hazardous Waste Cleanup Act.

VII. THE REMEDIAL ACTION

A. The County and Key Tronic shall finance and the County shall perform the Remedial Action in accordance with this Consent Decree. It is the intent of the parties that all work to be performed be embodied in Appendix B. The Remedial Action must meet the performance standards set forth in Appendix B.

B. The Scope of Work to be performed by the County at and about the Site is attached to this Consent Decree as Appendix B and is herein incorporated by reference in its entirety. The Scope of Work requires that the County submit plans for approval by the Government Plaintiffs and implement

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such plans after receiving Governmental approval. All such approved plans shall become a part of this Decree, and this Decree shall be so amended upon and by the filing of approved plans with the Court. The Scope of Work to be performed at the Site includes further site characterization, installation of pilot extraction wells and initial remediation as well as full and final remediation measures.

As specified more completely in Appendix B, the Remedial Action includes, inter alia,

1. Provision of an alternate drinking water supply to each residence whose domestic water supply is affected by Constituents of Concern or by the Remedial Action;

2. Additional monitor wells installed and sampled to define plume(s) boundaries;

3. Preliminary selection of types of treatment system to be constructed;

4. Treatability studies for the contaminated water based on the selected treatment method, if necessary;

5. Preliminary design;

6. Final design (plans and specifications);

7. Construction of the extraction wells, treatment system, and discharge structure(s);

8. Operation and maintenance manual, (draft and final);

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9. Operation and maintenance of the system;

10. System Performance monitoring program;

11. Monitoring program for domestic supply wells;

12. Pump tests for extraction wells;

13. Development and implementation of institutional controls to the degree authorized by law.

C. The Government Plaintiffs shall have such rights of review and approval of the Remedial Action as are provided herein. The Remedial Action shall be designed, implemented and completed in accordance with the National Contingency Plan (NCP) in effect on the effective date of this Consent Decree and with the standards, specifications, and schedule of completion set forth in Appendix B and Attachments and the plans and schedules developed in accordance therewith. The level of cleanup or treatment required by the Remedial Action with respect to constituents of concern shall not be in excess of the Performance Standards set forth in Appendix B, unless those standards are modified under the five-year review authorized under CERCLA § 121(c), and discussed in Section XXV, B.

D. The Government Plaintiffs, Key Tronic and Spokane County agree that the Remedial Action, as set forth in Appendix B; or as modified in accordance with Section XXIV (Force Majeure) or the Court, is consistent with the NCP and the

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Hazardous Waste Cleanup Act and that the amounts paid by Key Tronic and Spokane County to perform the work are necessary costs of response.

VIII. OBLIGATIONS OF CONSENTING PARTIES

A. Obligation of Key Tronic

The obligation of Key Tronic shall be limited solely to payment into the Trust Fund established under this Consent Decree of only the following amounts according to the following schedule:

Date	Amount
Within 15 days of entry of this Decree	650,000
September 30, 1989	650,000
September 30, 1990	950,000
September 30, 1991	950,000
September 30, 1992	1,000,000

Nothing herein shall preclude Key Tronic from paying prior to the date contained in this schedule. The obligation of Key Tronic under this paragraph shall not be affected in the event of a default by Spokane County.

B. Obligation of Spokane County

Spokane County shall comply with the relevant terms and conditions of this Consent Decree and implement the Remedial Action as specified in Appendix B. It is the intent of the parties, that, with the exceptions provided in Sections XIX and XXX, and consistent with Section XXV, any changes or mod-

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ifications to the Scope of Work embodied in Appendix B are not the responsibility of Key Tronic.

In the event of default by Key Tronic, Spokane County shall not be responsible for the unpaid share of costs attributable to Key Tronic pursuant to this Decree, or for any penalties resulting from delays caused by such a default. Nothing herein shall require the Government Plaintiffs to be responsible for such costs in the event of default by Key Tronic. The Government Plaintiffs reserve the right to take action against any or all parties in the event of such a default.

IX. INDEMNIFICATION

Spokane County agrees to indemnify and save and hold the Government Plaintiffs, their agents and employees harmless from any and all claims or causes of action for death or injuries to persons or for loss or damage to property arising from or on account of acts or omissions of the County, its officers, employees, agents, or contractors in entering into and implementing this Decree; provided, however, that the County shall not indemnify the Government Plaintiffs nor save nor hold its employees and agents harmless from any claims or causes of action arising out of the negligent or intentional acts or omissions of the Government Plaintiffs, or the employees and agents of the Governments in implementing the activities pursuant to this Decree. Nothing contained herein shall

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prevent the County from naming or joining EPA or Ecology for their own acts of negligence or intentionally tortious conduct, as provided by law. The Government Plaintiffs retain all rights and defenses with respect to such claims.

X. DATA REPORTING/AVAILABILITY, SAMPLING

The Government Plaintiffs and the County shall make the results of all sampling, laboratory reports, and/or test results generated by or on behalf of such party with respect to the implementation of this Consent Decree available to the other. The County shall submit these results in progress reports submitted in accordance with Section XI (Progress Reports) herein. The Government Plaintiffs shall submit their results in writing to the County within 30 days of receipt of a written request.

At the request of the Government Plaintiffs, the County shall allow split or duplicate samples to be taken by the Government Plaintiffs and/or its authorized representatives of any samples collected by Spokane County pursuant to the implementation of this Consent Decree. Spokane County shall use best efforts to notify the Government Plaintiffs at least five (5) working days in advance of any sample collection activity. The Government Plaintiffs shall allow split or duplicate samples to be taken by the County or its authorized representatives of any samples collected by the Governments

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pursuant to the implementation of this Consent Decree. The Government Plaintiffs shall use best efforts to notify the County at least five (5) working days prior to any sample collection activity.

Both the County and the Government Plaintiffs shall conduct all sampling and analysis in a manner consistent with the Quality Assurance/Quality Control Plan established for the Site.

XI. PROGRESS REPORTS

A. Spokane County shall provide or cause their contractors or agents to provide written reports to the Government Plaintiffs on a monthly basis during periods of construction as provided by Appendix B and quarterly thereafter until all the requirements of this Consent Decree have been implemented, or on such other basis as may be mutually agreed to by the County and the Government Plaintiffs without formal amendment of this Consent Decree. These progress reports shall describe the actions that have been taken toward achieving compliance with this Consent Decree, including 1) a general description of Remedial Action activities commenced or completed during the reporting period, 2) Remedial Action activities projected to be commenced or completed during the next reporting period, 3) and any problems that have been encountered or are anticipated by the County in commencing or completing

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the activities. The monthly progress reports are to be submitted to the Government Plaintiffs by the 10th of each month for work done the preceding month and planned for the current month. Quarterly progress reports are to be submitted to the Government Plaintiffs by the 10th of each month following the end of the preceding quarter.

B. If a progress report is incomplete or otherwise deficient, the Government Plaintiffs shall notify the County within twelve (12) work days of receipt of such progress report by the Government Plaintiffs. In the event that a longer review period is required, the Government Plaintiffs shall notify the County within seven (7) days of receipt of such document. The notice shall include a description of the deficiencies. Notwithstanding this schedule, unless the County invokes the procedures of Section XXVII (Dispute Resolution), the County or its contractors or agents shall make the necessary changes and resubmit the progress report or submit a response to the notice of disapproval with the next progress report to the Government Plaintiffs. Nothing in this paragraph shall be construed to negate these Government Plaintiffs' rights of review and approval.

C. If the Government Plaintiffs determine that a resubmittal progress report is deficient or disagree with the

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County's response to a notice of disapproval, the County may invoke the Dispute Resolution procedures of Section XXVII.

XII. OTHER REPORTS, PLANS AND OTHER ITEMS

A. Spokane County shall provide ten copies to EPA and five copies to Ecology of any item described as "deliverables" in the work plans and Scope of Work according to the schedule set forth therein.

B. If the Government Plaintiffs disapprove any plans, reports (other than monthly progress reports covered by Section XI, above) or other items required to be submitted to the Government Plaintiffs for approval pursuant to this Consent Decree, then the County shall have thirty (30) days from the receipt of such disapproval to correct any deficiencies and resubmit the plan, report or item for Governmental approval.

C. Any disapproval by the Government Plaintiffs shall be in writing and include an explanation of why the plan, report or item is being disapproved. In the event that a longer review period than specified in Appendix B is required, the Government Plaintiffs shall notify the County of that fact within 20 days of receipt of such document. Nothing in this paragraph shall be construed to negate these Government Plaintiffs' rights of review and approval.

D. The County must address each of the Government Plaintiffs' comments and resubmit to the Government Plaintiffs

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the previously disapproved plan, report or item with the required changes within the deadline set in Paragraph B, above.

E. If any plan, report, or item cannot be approved by the Government Plaintiffs after one resubmission, the County may invoke the Dispute Resolution procedures of Section XXVII.

XIII. RETENTION OF RECORDS

Spokane County shall preserve, during the pendency of this Consent Decree and for ten (10) years from the date of termination of this Consent Decree, all records, reports, documents, and underlying data in their possession, or in the possession of their employees, agents, relevant to the implementation of this Consent Decree, unless otherwise ordered by the Court. The County shall also require all such records in the possession of contractors to be provided to them and shall retain copies of all such records which are nonduplicative. Any party to this Consent Decree may have access to such documents. Notwithstanding any other provision of this Consent Decree, the Government Plaintiffs and the County retain any rights they may otherwise have including but not limited to privilege within the meaning of Rule 26(b) of the Federal Rules of Civil Procedure or Washington Civil Rule 26(b), governing the production of such records and documents.

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XIV. DESIGNATED PROJECT MANAGERS

A. Ecology's initial project manager is Mike Blum. EPA's initial project manager is Neil Thompson. Spokane County shall designate an initial project manager within thirty days of entry of the Decree. Each project manager shall be responsible for overseeing the implementation of this Consent Decree. The Government Plaintiffs' project managers will be the Government Plaintiffs' designated representatives at the Site. To the maximum extent possible, communications between the County and the Government Plaintiffs, and all documents, including reports, approvals, and other correspondence concerning the activities performed pursuant to the terms and conditions of this Consent Decree, shall be directed through the project managers.

Any party may change its respective project manager by notifying the other party, in writing, at least ten (10) calendar days prior to the change.

B. The Government Plaintiffs' project managers will observe and monitor the progress of the Remedial Action being performed pursuant to this Consent Decree. The project managers shall have the authority vested by 40 CFR § 300 et seq., and other applicable federal laws and regulations. The project managers do not have the authority to modify in any way the terms of this Consent Decree.

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XV. IMPLEMENTATION OF REMEDIAL ACTION

In the event that the Government Plaintiffs determine that the County has failed to implement the Remedial Action, the Government Plaintiffs may, after notice to the County and consistent with the Dispute Resolution procedures of Section XXVII, perform any or all portions of the Remedial Action that remain incomplete. If the Government Plaintiffs perform all or portions of the Remedial Action because of the County's failure without good cause to comply with their obligations under this Consent Decree, the County shall reimburse the Government Plaintiffs for the costs of doing such work within thirty (30) days of receipt of demand for payment of such costs, provided that the County is not obligated under this section to reimburse the Government Plaintiffs for costs incurred for work inconsistent with or beyond the scope of the Remedial Action unless it is work carried out under the five-year review provided for by CERCLA § 121(c), which is referenced in Section XXV. B. The Government Plaintiffs reserve the right to seek reimbursement for any other necessary costs of remedial action. The County does not waive any defenses to such actions. In any proceeding for costs under this section, the County shall have the burden of proving that costs claimed by the Government Plaintiffs were for work inconsistent with or beyond the scope

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of the Remedial Action, work that is inconsistent with the NCP, or work that was unnecessarily duplicative.

XVI. FINANCIAL ASSURANCES

The Government Plaintiffs have reviewed the financial capabilities of Key Tronic and Spokane County and have concluded that the availability of financial resources is not an impediment to implementation of the Remedial Action.

XVII. PAYMENT OF COSTS

A. State Costs

Spokane County agrees to reimburse the appropriate account of the Treasury of the State of Washington, as identified by Ecology, for Ecology's reasonable and appropriate costs as shown by an itemized statement of such costs compiled and presented in conformance with state Office of Financial Management standards and procedures associated with Ecology's oversight of the Remedial Action that are consistent with the NCP or ch. 70.105B RCW and not unnecessarily duplicative which have been conducted during the implementation of this Consent Decree. Within ninety (90) days of the end of each fiscal quarter, Ecology will submit to the County an itemized statement of Ecology's expenses for the previous quarter. Within ninety (90) days of receipt of the itemized statement, the County shall pay into the appropriate account of the Treasury

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of the State of Washington, as identified by Ecology, the required sum.

B. Federal Costs

1. Past costs. Spokane County agrees to reimburse the appropriate account as identified by EPA for EPA's reasonable and appropriate costs, including direct, indirect and oversight costs along with interest, expended prior to September 30, 1988. Said past costs shall be shown by an itemized statement of such costs compiled and presented by EPA to Spokane County. Spokane County shall pay such past costs within four years of the entry of this Decree.

2. Future costs. Spokane County agrees to reimburse the appropriate account as identified by EPA for EPA's reasonable and appropriate costs, including direct, indirect and oversight costs. EPA shall present the County with an itemized statement of such costs on an annual basis consistent with its fiscal year. Following receipt of the itemized statement, the County shall pay, within ninety (90) days, into the appropriate account as identified by EPA, the said sum.

C. Mixed Funding

1. State of Washington

Pursuant to RCW 70.105B.070(7) the Director has determined that funding from the state toxics control account is

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appropriate to help defray the costs of conducting the Remedial Action required under this Consent Decree. Such funding will promote prompt settlement and implementation without burdensome litigation and enhance cleanup operations, mitigate unfair economic hardship and will achieve greater fairness with respect to the payment of remedial action costs by providing for the shares of potentially liable persons (PLPs) who have not entered into a settlement agreement with Ecology.

As provided for by RCW 70.105B.070(7) Ecology may seek to recover funds provided under this Decree from non-settling potentially liable persons. Ecology further reserves the right to seek reimbursement for such funds from any party which has not fulfilled its obligations set forth in this Consent Decree.

To achieve the goals and purposes of RCW 70.105B.070(7), the Director has determined that funds shall be made available in the following specified amounts:

a. Past Costs. The parties agree that Key Tronic and Spokane County and other PLPs are liable as of June 23, 1988, for $386,541 including interest, for remedial action costs incurred by Ecology to date. As part of its share of mixed funding, Ecology agrees to waive collection of these costs from the County and Key Tronic.

b. Future Costs. The parties agree that Key Tronic and Spokane County and other PLPs are liable for Ecology's

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reasonable and appropriate oversight costs as provided above. As part of its share of mixed funding, Ecology agrees to waive collection of $100,000 of such future oversight costs from Key Tronic and Spokane County. Spokane County agrees to pay such oversight costs in excess of said amount.

c. Ecology agrees to preauthorize claims against the state toxics control account for up to $75,000 to be used in providing an alternate water supply as required by Appendix B.

d. Ecology agrees to preauthorize claims against the state toxics control account for up to $100,000 to be used for installation of an outfall pipe from the south extraction system to the Little Spokane River as required by Appendix B.

e. Ecology agrees to preauthorize claims against the state toxics control account for up to $100,000 to be used for construction of barrier wells in the south and west treatment systems as required by Appendix B.

All claims against the state toxics control account shall be contingent upon and subject to legislative appropriation.

2. United States. Claims Against the Fund.

a. In accordance with the preauthorization decision document (Appendix D to the Consent Decree), Spokane County may submit a claim for reimbursement to the Hazardous Substance Superfund (the "Superfund") for up to 1.4 million dollars

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($1,400,000.00), of the costs incurred in completing the remedial action. In no event shall the claims against the Fund exceed the sum of $1.4 million, unless the amount preauthorized is modified pursuant to subparagraph b. The claims against the Fund shall cover only Spokane County's costs of the remedial action. The claims shall not include any of the United States' oversight costs, or investigatory costs or past Response Costs that were incurred prior to the lodging of this Decree, which costs Spokane County is to pay to the Fund a portion thereof, pursuant to this section. Reimbursement from the Fund of the amount claimed by Spokane County shall be subject to the applicable claims and audit procedures specified in Appendix D, and shall be made in accordance with the procedures outlined in Appendix D. Spokane County may not submit Contractor Claims for reimbursement from the Fund. If the agency denies a claim in whole or in part, it shall notify the claimant of the reason for such denial. If the claimant is dissatisfied with EPA's decision, or if EPA fails to act on a claim within 90 days of its submission, the claimant may demand an administrative hearing before an administrative law judge as provided in Section 112 of CERCLA, 42 U.S.C. § 9612.

b. If it is subsequently determined that it is necessary to modify the actions that EPA preauthorized, or if it becomes apparent that the project's costs will exceed the

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approved costs as set out in Appendix D, Spokane County may submit to EPA a revised application for preauthorization. Further, Spokane County may submit a revised application for preauthorization upon EPA's determination of the requirements for final closure of the Site. EPA will consider requests for preauthorization from Spokane County in a timely manner and will revise the preauthorization to cover eleven and one-half percent (11.5%) of reasonable and necessary costs to implement the approved remedy.

c. Payment of any claim shall be subject to the County's subrogating to the United States their rights as claimant to the extent to which their response costs are compensated from the Fund. Further, Spokane County and its contractors shall assist in any cost recovery action which may be initiated by the United States. Spokane County and its contractors shall furnish the personnel, services, documents, and materials needed to assist EPA in the collection of evidence to document work performed and costs expended by the County or its contractors at the Site in order to aid in cost recovery efforts. Assistance shall also include providing all requested assistance in the interpretation of evidence and costs, and providing requested testimony. All of the County's contracts for implementing the preauthorization decision document shall

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include a specific requirement that the contractors agree to provide this cost recovery assistance.

D. Grant Funding

Upon entry of this Consent Decree, Spokane County shall be eligible to apply for grant funds from Ecology as provided by RCW 70.105B.220(4) and WAC 173-309-050.

XVIII. TRUST FUND

Key Tronic shall, subsequent to the effective date of this Consent Decree, deposit into the trust established by the trust agreement, which is attached hereto as Appendix C and is hereby incorporated by reference, the amount of four million two hundred thousand dollars and no cents ($4,200,000.00). Key Tronic shall pay funds into the trust fund under the schedule contained in Paragraph A of Section VIII of this Consent Decree. Said sum and any other funds derived from a settling PLP or PRP shall be held in trust pursuant to the terms of Appendix C. Ecology shall be designated as having the power of appointment under the trust (hereinafter "Trust Fund"). The Trust Fund shall be for the exclusive purposes of financing the Remedial Action required and set forth under the terms of this Consent Decree and implemented by the County.

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XIX. RESERVATION OF RIGHTS

A. Key Tronic

Notwithstanding compliance with its obligation under this Consent Decree to make the payments required under Paragraph A of Section VIII, and consistent with Sections XXV and XXX, Key Tronic is not released from liability, if any, resulting from its use of Colbert Landfill for costs of any removal or remedial action outside the terms of this Consent Decree taken by the Government Plaintiffs with respect to: (1) conditions at the Site, previously unknown to the Government Plaintiffs, which are discovered after the entry of this Consent Decree and which indicate that the Remedial Action is not protective of human health and the environment; (2) new information which is received after entry of this Consent Decree and which reveals a significant quantity of a hazardous substance originating from the Site not identified in the ROD or this Consent Decree or a condition not previously identified in the ROD or this Consent Decree as being present at the Site, in an area of the Site other than as described in the ROD or this Consent Decree, or in quantities significantly greater than as described in the ROD or this Consent Decree; or (3) contamination originating other than from the Site. The Government Plaintiffs reserve the right to take any such action outside the terms of this Consent Decree pursuant to CERCLA or the Hazardous Waste

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Cleanup Act. In addition, the Government Plaintiffs reserve the right to seek damages in exoneration/reimbursement from Key Tronic for such costs incurred by the Government Plaintiffs.

B. Spokane County

Notwithstanding compliance with the terms of this Consent Decree, including completion of the Remedial Action, the County is not released from liability, if any, for costs of any removal or remedial actions outside the terms of this Consent Decree taken by the Government Plaintiffs with respect to: (1) conditions of the Site, previously unknown to the Government Plaintiffs, which are discovered after the entry of this Consent Decree, when these previously unknown conditions indicate that the Remedial Action is not protective of human health and the environment; (2) new information which is received after entry of this Consent Decree and which reveals a significant quantity of a hazardous substance originating from the Site not identified in the ROD or this Consent Decree or a condition not previously identified in the ROD or this Consent Decree as being present at the Site, in an area of the Site other than as described in the ROD or this Consent Decree, or in quantities significantly greater than as described in the ROD or this Consent Decree; or (3) contamination originating other than from the Site. The Government Plaintiffs reserve the right to take any such action outside the terms of this

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Consent Decree pursuant to CERCLA or the Hazardous Waste Cleanup Act. In the event that the County fails or refuses to perform any tasks in accordance with the standards, specifications, and schedules specified in the work plans or Scope of Work, the Government Plaintiffs may undertake such tasks. In addition, the Government Plaintiffs reserve the right to seek damages in exoneration/reimbursement from the County for such costs incurred by the Government Plaintiffs.

XX. OTHER CLAIMS

Except as otherwise provided in this Consent Decree, nothing in this Consent Decree shall constitute or be construed as a release from any claim, cause of action or demand in law or equity against any person, firm, partnership, corporation, or state or local governmental entity not a signatory to this Consent Decree for any liability it may have arising out of or relating in any way to the generation, storage, treatment, handling, transportation, release, or disposal of any hazardous substances, hazardous wastes, pollutants, or contaminants found at, taken to, or taken from the Site. Except as provided in paragraph C and D of Section XVII, regarding mixed or grant funding to be provided by the Government Plaintiffs, this Consent Decree does not preauthorize or constitute any decision or preauthorization of funds under 42 U.S.C. § 9611(a)(2) or the Hazardous Waste Cleanup Act. Key Tronic and Spokane County

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waive any claims they may otherwise have against the Superfund or state or local toxics control accounts, with respect to liability for which they have been relieved under this Consent Decree.

XXI. COMPLIANCE WITH LAWS

A. Subject to the limitations of paragraph B of this section, all actions carried out by the County pursuant to the Consent Decree shall be done in accordance with all applicable federal, state statutes, rules, regulations and ordinances.

B. As provided in Section 121(e) of CERCLA, 42 U.S.C. § 9621(e), no federal, state, or local permit shall be required for the portions of the Remedial Action to be conducted entirely on the Site, although the County must comply with the substantive requirements of all applicable federal laws. As provided in Section 25 of the Hazardous Waste Cleanup Act, RCW 70.105B.250, the Remedial Action is exempt from the procedural and substantive requirements of state and local laws that would otherwise apply to the Remedial Action.

C. To the extent that, notwithstanding paragraph B of this Section, the County must obtain any permits in connection with the Remedial Action, the Government Plaintiffs may assist the County in obtaining any such permits after diligent efforts by the County. Any denial of assistance shall be subject to dispute resolution as provided in Section XXVII.

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XXII. SITE ACCESS

The Government Plaintiffs or any authorized representative of the Government Plaintiffs shall have the authority to enter and freely move about all property at the Site at all reasonable times for the purposes of, inter alia: inspecting records, operation logs, and contracts related to the Site; reviewing the progress in carrying out the terms of this Consent Decree; conducting such tests or collecting samples as the Government Plaintiffs or the project managers may deem necessary; using a camera, sound recording, or other documentary type equipment to record work done pursuant to this Consent Decree; and verifying the data submitted to the Government Plaintiffs by the County. The Government Plaintiffs shall split any samples taken during an inspection unless the County fails to make available a representative for the purpose of splitting samples. The County shall allow such persons to inspect and copy all records, files, photographs, documents, and other writings including all sampling and monitoring data, in any way pertaining to work undertaken pursuant to this Consent Decree that is not otherwise privileged within the meaning of Rule 26(b) of the Federal Rules of Civil Procedure or Washington Civil Rule 26(b). All parties with access to the Site pursuant to this section shall comply with approved health and safety plans. To the extent practicable, the Government

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Plaintiffs shall endeavor to notify the County prior to entering and moving about the Site.

If, after diligent efforts, the County is unable to achieve access, the Government Plaintiffs may assist in securing access pursuant to existing law, including RCW 70.105B.030 and 70.105B.110. Any denial of assistance shall be subject to dispute resolution as provided by Section XXVII.

XXIII. ENDANGERMENT

In the event the Government Plaintiffs determine or concur in a determination by another local, state, or federal agency that activities implementing or in noncompliance with this Consent Decree, or any other circumstances or activities, are creating or have the potential to create an imminent and substantial endangerment to the public health or welfare or the environment, the Government Plaintiffs may order the County to stop further implementation of this Consent Decree for such period of time as needed to abate the danger. During any stoppage of work under this section, the County's obligations with respect to the work ordered to be stopped shall be suspended and the time periods for performance of that work, as well as the time period for any other work dependent upon the work which stopped, shall be extended, pursuant to Section XXIV (Force Majeure) of this Consent Decree, for such period of time as the Government Plaintiffs determine is reasonable under the

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circumstances, in no event less than the time of the stoppage. If the Government Plaintiffs unreasonably stopped work and thereby increased costs to the County to perform the Remedial Action, the County reserves its rights to seek reimbursement from the Government Plaintiffs. The County shall bear the burden of proof regarding the reasonableness of stoppages by the Government Plaintiffs.

B. In the event the County determines that activities undertaken in furtherance of this Consent Decree or any other circumstances or activities are creating or have the potential to create an imminent and substantial endangerment to the people on the Site or in the surrounding area or to the environment, the County may stop implementation of this Consent Decree for such periods of time necessary for the Government Plaintiffs to evaluate the situation and determine whether the County should proceed with implementation of the Consent Decree or whether the work stoppage should be continued until the danger is abated. The County shall notify the Government Plaintiffs' project managers as soon as is possible, but no later than twenty-four (24) hours if the stoppage occurs on a weekday, and forty-eight (48) hours if the stoppage occurs on a weekend or holiday, after such stoppage of work, and provide the Government Plaintiffs with documentation of its analysis in reaching this determination. If the Government Plaintiffs

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disagree with the County's determination, it may order the County to resume implementation of this Consent Decree. During any stoppage of work under this paragraph, the County's obligations shall be suspended and the time periods for performance of that work, as well as the time period for any other work dependent upon the work which was stopped, shall be extended, pursuant to Section XXIV (Force Majeure) of this Consent Decree, for such period of time as the Government Plaintiffs determine is reasonable under the circumstances in no event less than the time of the stoppage.

C. Any disagreements pursuant to this clause shall be resolved through the dispute resolution procedures.

XXIV. FORCE MAJEURE

A. "Force Majeure" for purposes of this Consent Decree is defined as any event arising from causes beyond the control of Spokane County which delays or prevents the performance of any obligation under this Consent Decree. An extension of schedules shall be granted only when a request for an extension is submitted within 30 days from knowledge of an event and good cause exists for granting the extension. All extensions shall be requested in writing. The request shall specify the reason(s) the extension is needed. An extension shall only be granted for such period of time as the Government Plaintiffs determine is reasonable under the circumstances. The

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Government Plaintiffs shall act upon all written requests in a timely fashion. It shall not be necessary to formally amend this decree pursuant to Section XXV when a schedule extension is granted; however, following any schedule extension, the County shall prepare a revised schedule which they shall provide to the Government Plaintiffs and file with the Court.

B. The burden shall be on the County to demonstrate that the request for the extension has been submitted in a timely fashion and that good cause exists for granting the extension and due diligence has been exercised. Good cause may include, but not be limited to, the following:

(1) Circumstances beyond the reasonable control and despite the due diligence of the County (including delays caused by unrelated third parties);

(2) Delays not caused by Spokane County in the issuance of a necessary permit which was timely applied for;

(3) Other circumstances deemed exceptional or extraordinary;

(4) Changes in work plans; and

(5) Unanticipated access, drilling, or logistics problems;

Good cause shall include the following:

(1) Government Plaintiffs' review periods in excess of prescribed times.

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(2) Acts of God, fire, flood, blizzard, extreme temperatures that interfere with work performance, or other unavoidable casualty;

(3) Judicial Stay; and

(4) Work Stoppage due to endangerment as provided in Section XXIII.

Neither increased costs of performance of the terms of this Decree nor changed economic circumstances may be considered "force majeure" or circumstances beyond the reasonable control of the County.

XXV. AMENDMENT OF CONSENT DECREE

A. This Consent Decree may only be amended by written stipulation between the Government Plaintiffs and the affected party (parties). All affected parties shall be given prompt written notice of such amendments. Such amendment shall become effective upon entry by the Court. Agreement to amend shall not be unreasonably withheld by any party to the Consent Decree.

The County shall submit any request for modifications to the remedial program or project schedule to the Government Plaintiffs for approval. The Government Plaintiffs shall indicate their approval or disapproval of these in a timely manner after the request for modification is received. Reasons for the disapproval shall be stated in writing. If the

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Government Plaintiffs do not agree to any proposed modification, the disagreement may be addressed through the dispute resolution procedures described in Section XXVII of this Consent Decree.

In the event of any default, it is the intent of the parties that the provisions of this Consent Decree may be amended in order to prevent prejudice against the non-defaulting party and ensure timely implementation of the Remedial Action. Any decision of the Government Plaintiffs relating to financing the Remedial Action, in the event of a default, shall not be subject to dispute resolution.

B. In accordance with CERCLA, the design and operation of the Remedial Action will be reviewed and, if appropriate, adjusted at intervals not to exceed five years.

C. No guidance, suggestions, or comments by the Government Plaintiffs will be construed as relieving the County of its obligation to obtain formal approval as may be required by this Consent Decree. No verbal communication by the Government Plaintiffs shall relieve the County of the obligations specified herein.

The Government Plaintiffs shall notify the County in writing of any Government Plaintiff proposal for modifications of the remedial program or project schedule and the basis for such proposal. The County shall thereafter comply with such

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modifications, or if it does not agree with those modifications, the disagreement shall be addressed through the dispute resolution procedures described in Section XXVII of this Consent Decree.

XXVI. STIPULATED PENALTIES

A. Spokane County shall pay stipulated penalties of $100 per day for the submission of a deficient resubmittal progress report as called for in Section XI.

B. Except for the stipulated penalties specified in paragraph A, the County or Key Tronic shall pay the following stipulated penalties for each failure to comply with their respective requirements of this Decree, including but not limited to all financial commitments, implementation schedules and performance and submission dates:

Period of Failure to Comply	Penalty Per Violation Per Day
1st through 14th day	$500
15th through 44th day	$750
45th day and beyond	$1,000

Whether or not a violation has occurred shall be a matter for resolution under Section XXVII (Dispute Resolution).

C. Penalties shall accrue from the date performance is due or a violation occurs and continue until the final day of

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correction of the noncompliance. Nothing herein shall prevent the simultaneous accrual of separate stipulated penalties for separate violations of this Consent Decree. One-half of penalties due under this Section shall be payable to U.S. EPA and one-half shall be payable to Ecology, into accounts designated by the respective Government Plaintiffs.

D. Penalties shall accrue but need not be paid during the dispute resolution period. If the District Court becomes involved in the resolution of the dispute the period of dispute shall end upon the rendering of a decision by the District Court regardless of whether any party appeals such decision. If the County or Key Tronic does not prevail upon resolution, the Government Plaintiffs have the right to collect all penalties which accrue prior to and during the period of dispute. If the County or Key Tronic prevails upon resolution, no penalties shall be payable.

E. If the County or Key Tronic fails to pay stipulated penalties, the Government Plaintiffs may institute proceedings to collect the penalties. In the event that stipulated penalties, as approved in this Section, are not paid, U.S. EPA may elect to assess civil penalties and/or bring an action in U.S. District Court pursuant to Section 109 of CERCLA to enforce the provisions of this Consent Decree provided that County's or Key Tronic's total penalty

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exposure to EPA for violations shall be limited to $25,000 per day per violation of this Consent Decree. Payment of stipulated penalties shall not preclude U.S. EPA or the state from electing to pursue any other remedy or sanction to enforce this Consent Decree, and nothing shall preclude U.S. EPA or the state from seeking statutory penalties against the County or Key Tronic for violations of statutory or regulatory requirements.

XXVII. DISPUTE RESOLUTION

A. Except as otherwise specifically provided for in this Consent Decree, these dispute resolution procedures shall apply to all disputes between the County and the Government Plaintiffs with respect to the interpretation, application, denial or decisions of the Government Plaintiffs implementing this Consent Decree. Except as otherwise specifically provided for in this Consent Decree, any dispute which arises with respect to the interpretation, application, denial or a decision of the Government Plaintiffs implementing this Consent Decree shall in the first instance be the subject of informal negotiations between the County and the Government Plaintiffs. The period for informal negotiations shall be thirty (30) days from the date of receipt of a written statement of the issue in dispute, unless otherwise extended or shortened by mutual written agreement of the parties to the dispute. If the

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dispute is not resolved during the informal negotiation period, either party may petition the Court with notice to all parties, setting forth the matter in dispute, within fourteen (14) calendar days after the end of the informal negotiation period. In an emergency, any party to the dispute may file a petition prior to the expiration of the informal negotiations period. Unless otherwise ordered by the Court, the filing of a petition shall not operate to stay the Work which is the subject of dispute, nor extend or postpone the County's obligations under this Consent Decree with respect to the disputed issue.

The standard of judicial review shall be the arbitrary and capricious standard for all disputes involving the selection of the remedy. Otherwise, the standard of review for dispute resolution shall be determined by the Court, in accordance with CERCLA. With respect to disputes involving the selection of the remedy, the County shall bear the burden of proof for demonstrating that an action of the Government Plaintiffs is arbitrary and capricious. In all other disputes, the moving party shall bear the burden of proof on all disputes, whatever the applicable standard.

B. The Court's determination shall bind the County and the Government Plaintiffs. Each party shall bear its own attorney's fees, expert witness fees or legal costs resulting

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from utilization of the judicial review provisions of these dispute resolution procedures.

C. In no event will the performance standards contained in the Scope of Work (Appendix B) be subject to dispute resolution.

D. Delay caused by formal dispute resolution requested by the County in which the Government Plaintiffs prevail shall not constitute an excuse from payment of stipulated penalties, unless otherwise ordered by the Court.

E. Key Tronic may dispute the timeliness of payments made pursuant to Section VIII in the event that Stipulated Penalties are assessed pursuant to Section XXVI.

F. This section shall not apply to disputes regarding claims made by the County pursuant to Section XVII(C)(2) (Claims Against the Fund), and Appendix D, which shall be resolved as required by Section 112 of CERCLA, 42 U.S.C. § 9612.

XXVII. TRANSFER OF INTEREST IN PROPERTY

No conveyance of title, easement, or other interest in any portion of the Site owned by the County shall be consummated without provision for continued operation and maintenance of any containment system, treatment system, and monitoring system installed or implementation of that pursuant to this Consent Decree.

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Prior to transfer of any legal or equitable interest in all or any portion of property owned by the County, the County shall serve a copy of this Consent Decree upon any prospective purchaser, lessee, transferee, assignee, or other successor in interest of the property and, at least thirty (30) days prior to any transfer, shall notify the Government of said contemplated transfer.

Within thirty (30) days after entry of the Consent Decree the County shall cause to be recorded in the appropriate registry of deeds a notice and a copy of this Consent Decree with the deeds for its property at the Site, and shall verify to the Government Plaintiffs that such recording has been completed.

XXIX. COMMUNITY RELATIONS

The Government Plaintiffs shall be the lead for community relations, and the County shall be responsible for helping to coordinate and implement community relations for the Site. The Government Plaintiffs shall consult with the County in the preparation and finalization of fact sheets, press releases, and public notices.

The Government Plaintiffs shall accommodate where possible the County's concerns prior to release of such information. The County shall assist in:

1. Distribution of the fact sheets referred to above;

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2. Coordination of public meetings;

3. In supplying appropriate documents and information for the information repositories.

In the event of the disagreement over the contents of any document prepared for purposes of community relations, or any other decision related to community relations, or any other decision related to community relations, the Government Plaintiffs determination shall be final.

Nothing provided in this section shall prevent the County from developing or conducting its own Community Relations Program, consistent with this Decree.

XXX. COVENANTS NOT TO SUE

A. State of Washington. Except as specifically provided in Paragraph A.2 of this Section, the State of Washington covenants not to sue Key Tronic and the County for Covered Matters. Covered Matters shall include any and all civil liability to the state for causes of action arising under the Hazardous Waste Cleanup Act, ch. 70.105 RCW, or ch. 90.48 regarding contamination from hazardous substances originating from the Site, identified herein as constituents of concern. This Consent Decree is entered into to provide for Remedial Action at the Colbert Landfill site. The Director finds that issuance of a covenant not to sue is appropriate and within the public interest as defined by RCW 70.105B.080(2). The Remedial

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Action to be implemented will achieve cleanup levels that prevent actual or potential harm to human health and the environment as required by RCW 70.105B.060.

1. Except as specifically provided otherwise in Paragraph A.2, this covenant not to sue shall take effect as to Key Tronic upon tender of all payments required under Paragraph A of Section VIII and as to the County upon certification by the State of Washington of the completion of the Remedial Action. Upon receipt of all payments from Key Tronic as provided in Paragraph A of Section VIII, the Government Plaintiffs shall issue a Certification of Completion to Key Tronic. Key Tronic may apply for such a certification upon tender of its final payment. The Government Plaintiffs shall issue the Certification of Completion according to the terms of RCW 70.105B.090. The County will request the State of Washington to make a final inspection upon completion of the work as described in Appendix B. The State of Washington shall promptly provide public notice as required by RCW 70.105B.090(1), and inspect the work to determine if such work has been completed in accordance with the plans. The inspection shall occur within thirty (30) days of the request unless the parties agree to a later date. The State of Washington shall notify the County in writing within thirty (30) days of the initial inspection that the work has been

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satisfactorily completed or shall specify any corrective work it believes to be needed. The County shall notify the State of Washington of the completion of any necessary corrective work. The State of Washington shall reinspect if it deems necessary within ten (10) days of the notification from the County. This procedure shall be utilized in combination with the Dispute Resolution procedures of Section XXVIII if necessary, until it has been determined that the work has been satisfactorily completed. Within ten (10) days of determining the work has been satisfactorily completed, the State of Washington shall issue a certificate of completion to the County, according to the terms of RCW 70.105B.090.

2. Notwithstanding any other provision in this Consent Decree, the State of Washington reserves the right to institute proceedings in this action or in a new action (a) seeking to compel the County or Key Tronic to perform or finance further response actions at the Site in addition to or other than the Remedial Action or (b) seeking reimbursement of the Government Plaintiffs' response costs, if:

(i) for proceedings before certification of completion, (A) new information reveals conditions at the Site, previously unknown to the Government Plaintiffs, are discovered after the entry of this Consent Decree and which indicates that the Remedial Action is not protective of human health and the

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environment; or (B) new information is received after entry of this Consent Decree and the new information reveals a significant quantity of a hazardous substance originating from the Site or condition not identified in the ROD or this Consent Decree as being present at the Site, in an area of the Site other than as described in the ROD or this Consent Decree, or in quantities significantly greater than in this ROD or this Consent Decree;

(ii) for proceedings after certification of completion, (A) conditions at the Site, previously unknown to the State of Washington are discovered after certification of completion or information is received, in whole or in part, after certification of completion, and these previously unknown conditions or this information indicate that the Remedial Action is not protective of human health and the environment, or (B) after certification of completion, the State of Washington discovers the release or threatened release from the Site of hazardous substances not identified in the ROD as originating from the Site.

3. The State of Washington's right to institute proceedings in this action or in a new action seeking to compel Key Tronic or the County to perform response actions in addition to or other than the Remedial Action regarding contamination originating from the Site, or seeking

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reimbursement from Key Tronic or the County for the costs of such response actions, may only be exercised where the conditions in Paragraph A.2 are met.

4. Notwithstanding any other provision of this Consent Decree, the covenants not to sue under this Section shall not relieve Key Tronic and the County of their obligation to meet and maintain compliance with the requirements set forth in this Consent Decree, including the requirement of Key Tronic to make the payments as provided herein and the requirement of the County to implement the Remedial Action.

B. United States.

1. Except as specifically provided hereafter in Section XXX(B)(2) and (3) upon compliance by Spokane County and Key Tronic with Sections VII and VIII hereof, EPA, Spokane County and Key Tronic hereby covenant not to sue each other as to all matters alleged or all matters which could have been alleged in the Complaint with regard to the Site, except claims against the EPA-Hazardous Substance Superfund as provided herein in Section XVII. With respect to future liability, this covenant shall take effect upon certification by the United States that the Remedial Action has been successfully completed. This paragraph shall not be construed as a covenant not to sue the County or Key Tronic respectively, if that party does not make all payments required of it by this

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Consent Decree, or any other person or entity not a party to this Consent Decree. This covenant not to sue applies only to Spokane County and Key Tronic, including its respective divisions, officials, officers, directors, principals, agents, servants, employees, successors, and assigns, and not to any parent corporation, subsidiaries and affiliates of the County and Key Tronic.

2. This Covenant Not to Sue shall not apply to the following:

a. criminal liability;

b. with respect to the County, failure to perform the Work in accordance with law or failure to meet the requirements of this Consent Decree or the Plan; or

c. with respect to the County, liability arising from the transportation of Hazardous Substances recovered from the Site and redisposal thereof of Waste Materials taken from the Colbert Landfill Site; or

d. with respect to the County and consistent with Sections XIX, XXV and XXX, any costs incurred by the United States as a result of a response action undertaken under Section 104 of CERCLA, 42 U.S.C. § 9604, or any costs incurred by the state as a result of the exercise of its response authority under ch. 70.105 or 70.105B RCW, due to a release or threat of a release at or from the Colbert Landfill Site as a

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result of the failure of Spokane County to perform the Remedial Action or meet the requirements of Section VII or the Scope of Work (Appendix B), whenever Spokane County has failed to so respond after reasonable notice. In the event Spokane County fails to implement the provisions of Section VII in a timely manner, either of the Government Plaintiffs may perform such portions of the Remedial Action as may be necessary, at the cost of Spokane County, subject to Section XV hereof;

e. any costs incurred by either Government Plaintiffs as a result of any release or threat of release of hazardous substances at or from the Colbert Landfill Site which results from failure(s) of the County to perform the Remedial Action or meet the requirements of this Consent Decree or the Scope of Work (Appendix B); or from failure(s) of Key Tronic to meet the requirements of this Consent Decree; or

f. liability for damage to natural resources, as defined in Section 101(16) of CERCLA, 42 U.S.C. § 9601(16).

3. Notwithstanding any other provisions of this Consent Decree, the United States reserves the right to institute proceedings in this action or in a new action seeking to compel Spokane County or Key Tronic to perform additional response work at Colbert Landfill Site or to reimburse the United States for Response Costs, other than Response Costs incurred prior to the effective date of this Consent Decree, if:

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a. for proceedings prior to certification of completion of the respective obligations of the parties per Section VIII by the United States,

(i) conditions at the Colbert Landfill previously unknown to or undetected by the United States are discovered after the lodging of this Consent Decree and these conditions indicate that a hazardous substance has been, or is being, released or that there is a substantial threat of such a release into the environment; or

(ii) the United States determines, based on information received, in whole or in part, after the lodging of this Consent Decree, that the Remedial Action taken at the Colbert Landfill Site, is not protective of human health and the environment.

b. For proceedings subsequent to certification of completion of the respective obligations of the parties per Section VIII by the United States,

(i) conditions at the Colbert Landfill Site previously unknown to or undetected by the United States are discovered after the

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certification of completion and these conditions indicate that a hazardous substance has been, or is being, released or that there is a substantial threat of such a release into the environment; or

(ii) the United States determines, based on information received, in whole or in part, after the certification of completion, that the Remedial Action taken at the Colbert Landfill, is not protective of human health and the environment.

4. Notwithstanding any other provision in this Consent Decree, the covenant not to sue in Section XXX(B)(1) shall be subject to the satisfactory performance by Spokane County and Key Tronic of its obligations under this Consent Decree and the covenant not to sue shall not relieve Spokane County or Key Tronic of its obligation to meet and maintain compliance with the requirements set forth in this Consent Decree.

5. Spokane County or Key Tronic's claims against any other party in this or any other proceeding for contribution or indemnification of all or a portion of the cost of its settlement herein, shall be secondary to the United States' claim against such other party for the response actions or

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other costs incurred by the Government Plaintiffs for actions taken at the Site.

XXXI. EFFECTIVE AND TERMINATION DATES

A. This Consent Decree shall be effective upon the date of its entry by the Court.

B. Termination of this Consent Decree may only be effected upon completion of all Remedial Action activities including operation and maintenance activities, reimbursement of Government Plaintiffs costs and resolution of any outstanding disputes pursuant to this Decree. Termination of this Consent Decree shall not affect the Covenant Not to Sue, Section XXX, which shall remain in effect as an agreement between the parties.

C. This Consent Decree shall remain in effect and the Remedial Action described herein shall be maintained and continued until both Key Tronic and the County receive written Certification of Completion from the Government Plaintiffs. The Certifications of Completion shall be issued according to the terms of RCW 70.105B.090.

XXXII. RETENTION OF JURISDICTION

This Court shall retain jurisdiction over this matter for the purposes of interpreting, implementing, modifying,

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enforcing or terminating the terms of this Consent Decree, and of adjudicating disputes between the parties under this Consent Decree.

XXXIII. NOTICES

Whenever, under the terms of this Consent Decree, written notice is required to be given or a report or other document is required to be given or a report or other document is required to be forwarded by one party to another it shall be directed to the individuals specified below unless those individuals or their successors give notice in writing to the other parties.

As to the Governments:

Colbert Site Manager
Department of Ecology
Hazardous Waste Investigations and Cleanup Program
Mail Stop PV-11
Olympia, WA 98504-8711

Colbert Site Manager
EPA Region 10
Superfund Group - HW-113
1200 Sixth Avenue
Seattle, WA 98101

As to the Defendants:

David Powers
Key Tronic Corporation
P. O. Box 14687
Spokane, WA 99214

Bill Dobratz
Director of Public Utilities
N. 811 Jefferson
Spokane, WA 99260

XXXIV. LODGING OF DECREE WITH THE COURT AND PUBLIC COMMENT

This Consent Decree shall be lodged with the Court for a period of 30 days for public comment pursuant to the provisions of 28 CFR § 50.7, § 122 of CERCLA, 42 U.S.C. § 9622, RCW 70.105B.070(5), and WAC 173-340-040(7) and it shall not be

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submitted to the Court for execution until the expiration of that period. The parties reserve the right to withdraw or withhold its consent to a judgment based on this Consent Decree if the comments, views and allegations concerning the Consent Decree disclose facts or considerations which indicate that the Consent Decree is inappropriate, improper or inadequate.

Comments on the Consent Decree shall be submitted to the United States Department of Justice and shall be promptly forwarded to all parties.

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The State of Washington, the United States, Key Tronic and the County by their duly authorized representatives agree to this Consent Decree subject to the public notice requirements found at 28 CFR § 50.2, RCW 70.105B.070(5) and WAC 173-340-040(7).

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

By: Christine O. Gregoire

Its: Director

Date: 11/2/88

UNITED STATES OF AMERICA
on behalf of the
ENVIRONMENTAL PROTECTION AGENCY

By: _____

Its: Regional Administrator

Date: November 7, 1988

SPOKANE COUNTY

By: Patricia A. Nuxoll

Its: Bd of County Comrs

Date: OCT 24 1988

KEY TRONIC CORPORATION

By: Lewis G. Zirbel

Its: Chairman of the Board, CEO & President

Date: October 24, 1988

DATED this 7th day of Nov, 1988.

JUDGE

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UNITED STATES OF AMERICA

By: _____
ROGER J. MARZULLA

Its: Assistant Attorney General

Date: _____

By: _____

_____

Its: Attorney, Land & Natural Resources Division

Date: 12/19/88

UNITED STATES ATTORNEY

By: _____

_____

Its: Assistant United States Attorney

Date: 1/5/89

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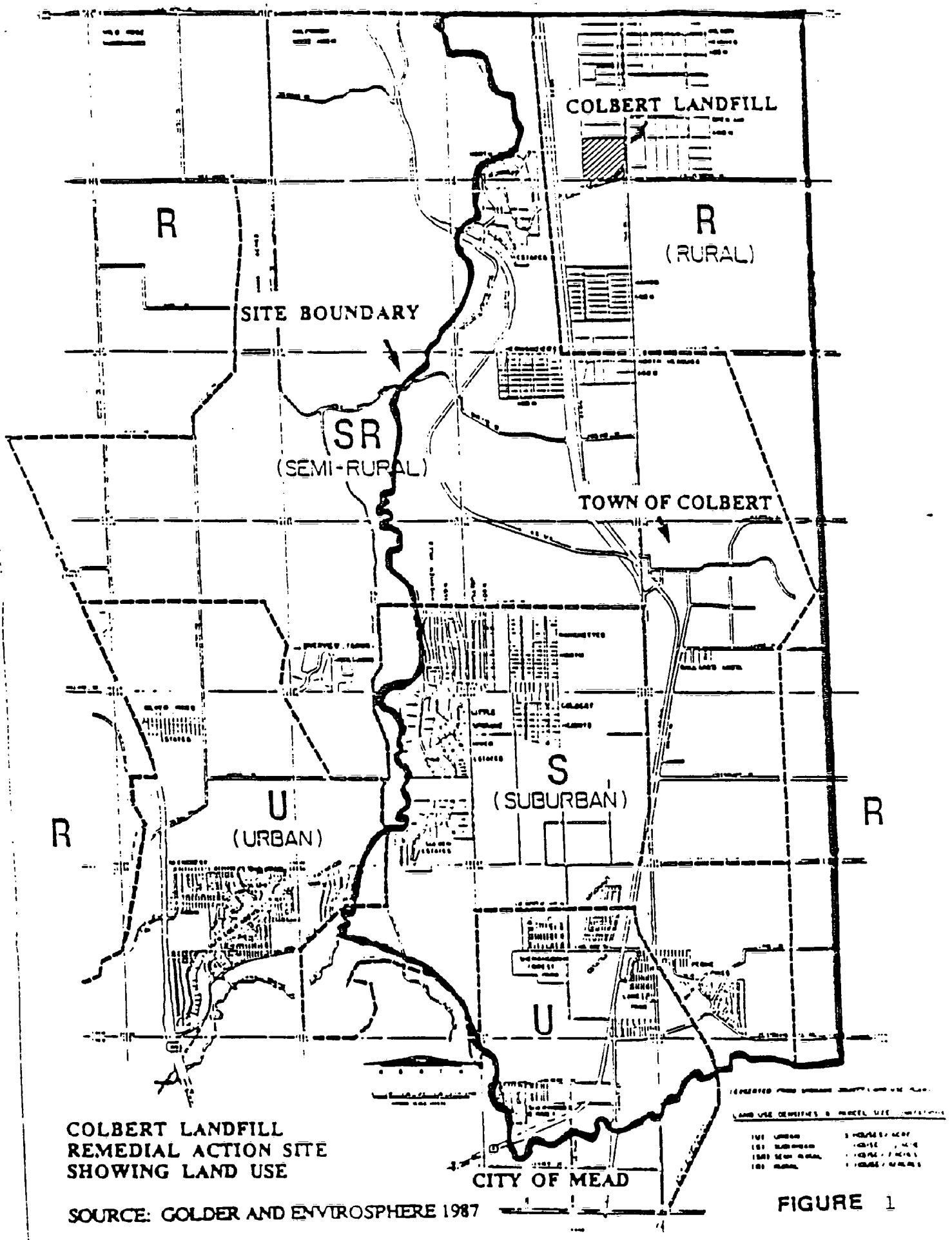
APPENDIX A

I. SITE LOCATION AND DESCRIPTION

The Colbert Landfill is a Spokane County-owned sanitary landfill that was operated from 1968 through 1986. The Colbert area is in northeastern Washington, in Spokane County, approximately 15 miles north-northeast of Spokane, Washington. The landfill covers 40-acres and is located about 2.5 miles north of the Town of Colbert and a half mile east of U.S. Highway 2 (Newport Highway) in the northwestern quadrant of the intersection of Elk-Chattaroy, Yale, and Big Meadows Roads. It is situated in the southeast corner of Section 3, Township 27 North, Range 43 East, W.M. (Figure 1). The landfill received both municipal and commercial wastes up to 1986, is now filled to capacity, and is no longer receiving waste.

The remedial action site, the area of potential impact surrounding the landfill, extends north of the landfill about a half mile, west about a mile to the Little Spokane River, east a similar distance, and south approximately five miles to Peone (or Deadman) Creek. The total area is approximately 6800 acres which includes parts of Sections 2, 3, 10, 11, 14, 15, 16, 21, 22, 23, 26, 27, 28, 33, 34, and 35 of the same township and range. The site is entirely within the drainage basin of the Little Spokane River, mainly on a plateau bounded by bluffs down to the river on the west and knobby granite and basalt hills to the east. (See Figure 1)



COLBERT LANDFILL
REMEDIAL ACTION SITE
SHOWING LAND USE

SOURCE: GOLDER AND ENVIROSPHERE 1987

FIGURE 1

EXHIBIT 3

CERCLA PENALTY FOR PRESENTING FRAUDULENT CLAIM

Any person who knowingly gives or causes to be given false information as a part of a claim against the Hazardous Substance Superfund may, upon conviction, be fined in accordance with the applicable provisions of title 18 of the United States Code or imprisoned for not more than 3 years (or not more than 5 years in the case of a second or subsequent conviction), or both. (42 USC 9612 (b)(1).)

CIVIL PENALTY FOR PRESENTING FRAUDULENT CLAIM

The claimant is liable to the United States for a civil penalty of $2,000, and an amount equal to two times the amount of damages sustained by the Government because of the acts of that person, and costs of the civil action. (31 USC 3729 and 3730.)

CRIMINAL PENALTY FOR PRESENTING FRAUDULENT CLAIM OR MAKING FALSE STATEMENTS

The claimant will be charged a maximum fine of not more than $10,000 or be imprisoned for a maximum of 5 years, or both. (See 62 Stat. 698, 749; 18 USC 287, 1001.)

APPENDIX "B"

SCOPE OF WORK

FOR

REMEDIAL ACTION TO ADDRESS GROUND WATER CONTAMINATION

EMANATING FROM COLBERT LANDFILL

SPOKANE COUNTY, WASHINGTON

27 September 1988

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I

INTRODUCTION

This Scope of Work sets forth the technical activities associated with remediation of "contamination" emanating from the Colbert Solid Waste Landfill in Spokane County near the town of Colbert, Washington. It shall be the responsibility of the County to prepare, submit for approval, and fully implement work plans incorporating each element of this Scope of Work, and to verify that Performance Standards and criteria set forth in this Scope of Work are met.

For the purposes of the Consent Decree, including this Scope of Work, the terms "contaminants" and "contamination" shall be understood to mean the six compounds or Constituents of Concern identified in Table 1 of the Colbert Landfill Record of Decision (ROD) and Table I-1 of this Scope of Work. These tables also specify the Performance Standards (Health Protection Levels), which are not to be exceeded during operational life of remedial action, in effluents from ground water treatment systems. Permanent reduction of contaminant concentrations below these levels throughout the site will indicate completion of the Remedial Action.

The ROD for Remedial Action at the Colbert Landfill identifies three separate systems, each designed to pump and treat contaminated ground water. These systems have been designated as the south, west, and east systems. Both the south and west systems are intended to intercept contaminated ground water to minimize degradation of downgradient resources. The south system will be designed to pump and treat ground water from the upper sand and gravel aquifer, while the west system will pump and treat water from the lower sand and gravel aquifer. In contrast to the south and west systems, the east system is intended for source control. This system will be designed to remove contamination close to the source, to reduce its potential for migration from the source area. The east system will be designed to pump water from the lower sand and gravel aquifer, and potentially the weathered basalt/Latah and Latah aquifers, which are beneath the lower sand and gravel.

The ROD provides for a performance-based design. The performance-based nature of the ROD allows considerable latitude in the design of the Remedial Action. However, the relatively sparse data available to characterize the hydrogeology and extent of contamination make it impractical to design a system at this time. To supplement the data base, a phased project approach will be implemented. Phase I will combine the pilot studies with further site characterization and the initiation of cleanup activities. Phase II will provide for evaluation of the Phase I results and design of the final Remedial Action program.

TABLE I-1*

PERFORMANCE STANDARDS
MAXIMUM ALLOWABLE CONTAMINANT CONCENTRATIONS

Health Protection Levels[a]

Compound	Maximum Concentration (PPB)	Basis[b]
1,1,1-Trichloroethane	200	MCL[c]
1,1-Dichloroethylene	7	MCL[c]
1,1-Dichloroethane	4,050	MAC[d]
Trichloroethylene	5	MCL[c]
Tetrachloroethylene	0.7	MAC[e]
Methylene Chloride	2.5	MAC[e]

(a) Health Protection Levels are not to be exceeded, during operational life of remedial action, in effluents from ground water treatment systems. Permanent reduction of contaminant concentrations below these levels throughout the site will indicate completion of the remedial action.
(b) Based on MCL and MAC values in effect as of the date of entry of this Consent Decree.
(c) Federal Drinking Water Maximum Contaminant Levels (MCL).
(d) Maximum Acceptable Concentration presented in ROD, Table 5, pg. 31.
(e) Maximum Acceptable Concentration based on EPA Cancer Assessment Group evaluation (10^{-6} Cancer Risk).

* Source: Table 1, Record of Decision, Colbert Landfill Site, USEPA, September 1987.

In order to comply with the ROD, the work defined in this document must first be completed. It is recognized that information developed during implementation of Phase I of this Scope of Work (Section IV) may alter previous conclusions and indicate that amendment to the Scope of Work, or other portions of the Consent Decree, as it relates to Phase II, is appropriate. Such information may include data relating to the extent of contamination, site hydrogeology, initial field pilot testing, technical feasibility or implementability of the remedial options originally chosen, or refinement of the relative costs of available options. Remedial Actions designed to meet the objectives of Section II of this Scope of Work will be accomplished during Phase II (Section V).

II

OBJECTIVES

The objectives of the Remedial Action at the Colbert Landfill Site are to:

A. Prevent ingestion of contaminated ground water;

B. Provide alternative drinking water supplies to those residents whose domestic water supply well(s), in use prior to the date of entry of this Consent Decree, are now contaminated or become contaminated at levels exceeding those described in Section VIII of this Scope of Work, or where the productivity of their existing supply well(s) is adversely impacted by remedial activities;

C. Prevent the further spread of contaminated ground water and remove contamination related to the site from the ground water aquifers;

D. Protect surface waters from ground water discharges potentially harmful to aquatic organisms;

E. Establish institutional controls as authorized by law to promote and support remedial actions; and

F. Prevent transfer of Constituents of Concern from water to air at levels above health protection criteria.

These objectives are met by the actions to be taken in accordance with this Scope of Work.

III

GENERAL REQUIREMENTS

The general requirements of this Scope of Work are as follows:

A. All actions performed at and around the site pursuant to this Scope of Work shall be accomplished in accordance with work plans, which shall be prepared by the County and submitted for review and approval by the Government Plaintiffs. Work plans for each element of the Remedial Action program shall include relevant designs; construction sequences and schedules; and maintenance, operating and monitoring requirements. In addition to these basic requirements, the ground water extraction and treatment plans shall include all design assumptions and other engineering support materials as appropriate.

B. All work shall be performed under an appropriate health and safety plan for the protection of workers and the surrounding community. The County shall submit this plan to the Government Plaintiffs for review and approval.

C. The County shall require their contractors to be responsible for observing safe practices with respect to all active local utilities within the site.

D. The County shall submit to the Government Plaintiffs, for review and approval, a sampling and analysis protocol for all ground water monitoring before any such activity is undertaken. This sampling and analysis protocol shall include a description of field sampling procedures and specify procedures for Quality Assurance/Quality Control. All procedures shall conform with appropriate EPA guidance documents. Detection limits attainable using standard procedures specified for the EPA Contract Laboratory Program as of the date of entry of the Consent Decree shall be used. The County shall provide the Government Plaintiffs with quality-assured data as they become available.

E. Each ground water extraction and treatment system shall remain operable until the performance criteria identified in this Scope of Work (Section X) are met. Discharges of air and water from these systems shall be in compliance with applicable regulations.

F. Definitions set forth in Section IV of the main body of the Consent Decree shall apply throughout this Scope of Work.

IV

PHASE I

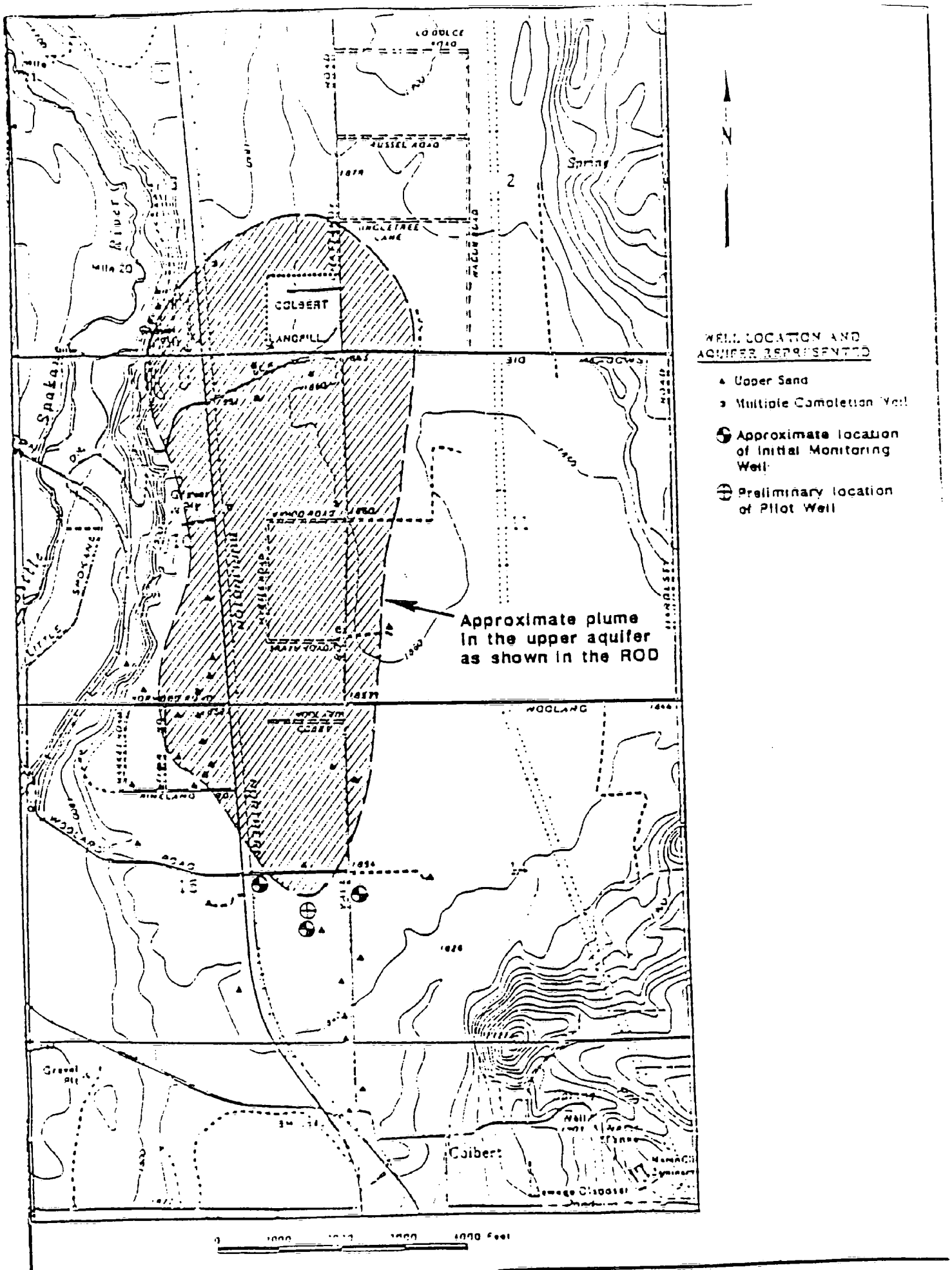
A. South System

1. Introduction -- Previous studies of contamination emanating from the Colbert Landfill have identified a contaminant plume moving to the south in the upper aquifer. The location of the plume is based on limited data obtained in late 1985. These data are insufficient to adequately define the extent of the contaminant plume and project the rate or direction of future contaminant migration. The purpose of Phase I for the upper aquifer south of the landfill is to develop specific design requirements for a Phase II - South ground water interception and treatment system, and to initiate cleanup in this area. Activities described in this section relate to the upper aquifer south of the landfill and include: installation of a pilot ground water extraction and treatment system, installation of a ground water monitoring system to identify the location of the contaminant plume and assess the performance of the pilot system, assessment of treated water discharge management options, and definition of the Phase II - South ground water interception and treatment system.

2. Site Investigations --

a. Installation of Monitoring Wells -- A series of three to five monitoring wells will be installed to provide data needed to assess the contaminant distribution in, and hydrogeologic properties of, the upper aquifer near the probable location for a system of ground water extraction wells. These monitoring wells will be installed in phases, first to identify the preferred location of the pilot extraction well and later to assess pilot interception system performance.

Initially, three monitoring wells will be installed at the approximate locations shown on Figure IV-1. The actual locations of these monitoring wells will depend on plume contaminant levels and site access, and may vary from the locations shown. These wells will provide data related to contaminant concentration levels, saturated thickness of the aquifer, and hydraulic gradient, from which the location and design characteristics of the pilot extraction well will be determined. If the County determines that the location of the pilot extraction well will not be close to one of the initial monitoring well locations, up to two additional monitoring wells will be installed near the selected pilot extraction well site. These wells will be used to confirm the final site selection for, and to assess the performance of, the pilot extraction well after it is installed. Monitoring wells will be constructed of 2-inch Schedule 80 PVC and screened within the upper aquifer up to a maximum 20 foot length.



Source: Golder Associates, Inc., May 1987.

Phase I - South System

Figure II

b. Monitoring Well Sampling and Analysis -- Chemical analysis of water samples from the monitoring wells will be used to evaluate contaminant characteristics and other critical water quality parameters. Water level measurements will be used to evaluate the horizontal hydraulic gradient and the saturated thickness of the aquifer. This information will be used for design, placement, and performance evaluation of the pilot extraction well and in the design of the Phase II - South treatment and discharge system.

Chemical analyses will focus on the six compounds identified in Table I-1 and will be performed by EPA Method 8010 (SW-846, USEPA, 1986) or equivalent. These compounds are:

1,1,1-trichloroethane (1,1,1-TCA)
1,1-dichloroethylene (1,1-DCE)
1,1-dichloroethane (1,1-DCA)
trichloroethylene (TCE)
tetrachloroethylene (PCE)
methylene chloride (MC)

Other parameters, including temperature, pH, conductivity, hardness, iron, and manganese will be determined for use during treatment system design activities.

Due to difficulties anticipated in accurately quantifying methylene chloride and tetrachloroethylene at their Performance Standard concentrations, alternative evaluation criteria have been developed for these constituents. These criteria are presented in Table IV-1, along with the Performance Standards for the other constituents of concern. Table IV-1 evaluation criteria will be applied to the interception, treatment, and discharge of ground water containing constituents of concern. If the levels to which these compounds can be accurately quantified (using EPA Method 8010) change during the course of this project, Table IV-1 will be adjusted accordingly. However, evaluation criteria will not be adjusted to concentrations lower than the Table I-1 Performance Standards.

The three initial monitoring wells will be sampled after development. Analysis of samples from this effort may be sufficient to identify the final location of the pilot extraction well. In the event of anomalies in data from this initial sampling, the County may, at its discretion, conduct follow-up sampling at bi-weekly intervals for verification purposes.

Monitoring wells at up to two additional locations will be installed in the vicinity of the proposed pilot well site and sampled after development. Data obtained from these wells will be used to assess performance of the pilot well. As above, in the event of anomalies in these data, the County may, at its discretion, conduct follow-up bi-weekly sampling and analysis for verification purposes.

TABLE IV-1

EVALUATION CRITERIA

Compound	Evaluation Criteria (ppb)
1,1,1-Trichloroethane	200
1,1-Dichloroethylene	7
1-1,Dichloroethane	4,050
Trichloroethylene	5
Tetrachloroethylene	7
Methylene Chloride	25

* * * * * * * *

During the first month after pumping of the pilot extraction well begins, samples for chemical analysis will be obtained at least weekly from the pilot extraction well and at least the two closest monitoring wells. After this initial 4-week period, the pilot extraction well and the monitoring wells will be sampled and analyzed at least quarterly during operation of the pilot system.

c. Water Level Monitoring -- Water level monitoring will be conducted in at least the two monitoring wells closest to the pilot extraction well. Data from this effort will be used to assess pilot extraction well performance and further define the hydrogeology of the site. Monitoring will begin before startup of the pilot pumping system and will continue until water level conditions stabilize or until it is demonstrated that continuous pumping is not possible. Private supply wells may, at the County's discretion, be included in this study.

3. **Pilot Extraction Well** -- Information obtained from the pilot extraction well is intended to aid in the design of the Phase II - South interception, treatment, and discharge system.

a. Location of the Pilot Extraction Well -- Ideally, the pilot extraction well would be installed at a location where contaminant concentrations are approximately equal to the Performance Standards. The preliminary location, based on available data, is shown on Figure IV-1.

b. Construction of the Pilot Extraction Well -- Construction details for the pilot extraction well will be influenced by information obtained from the initial monitoring wells. It is anticipated that the pilot well will be constructed using 6- or 8-inch diameter steel casing and a stainless steel screen. The screen length will be approximately one-half to two-thirds of the saturated thickness of the aquifer. The bottom of the screen will be placed at the base of the aquifer near the contact with the lacustrine deposit.

c. Pumping of the Pilot Extraction Well -- The pilot extraction well will be equipped with a submersible pump. A well at this location should be capable of providing at least 20 to 50 gallons per minute (gpm). The pumping rate may, at the County's discretion, be increased to 100 gpm if the aquifer is capable of sustained production at that rate.

d. Duration of Pilot Testing -- It is intended that the pilot extraction well operate for at least a 30-day period, and possibly until implementation of the complete Phase II - South system. If appropriate, it will be incorporated into the Phase II - South system.

e. Chemical Analysis of Pilot Well Samples -- Analysis of samples from the pilot extraction well will be as described above in Section IV.A.2b.

4. **Treatment System** -- The treatment system ultimately constructed as part of the Phase II - South system must utilize cost-effective and reliable technology. Cost effectiveness is to be based on long-term operating and maintenance costs as well as the initial installation cost.

A pilot air stripping system will be included as part of the Phase I activities. This system will be capable of handling variable flow rates of up to 100 gpm and discharging water at concentrations that comply with the Table IV-1 evaluation criteria. Samples will be collected at least weekly from the discharge pipe to verify compliance with the evaluation criteria. Final design of this system will be dependent on input water quality characterized by the initial monitoring wells. This temporary system will not include off-gas treatment or air monitoring.

5. **Treatment System Water Discharge** -- Discharge will be to Deep Creek or the Little Spokane River or subsurface infiltration. If discharge is to the Little Spokane River, sizing of the discharge line may reflect Phase II - South system discharge rates if these can be adequately defined prior to operation and evaluation of the pilot system.

6. **Study Analysis and Feasibility Evaluation** -- In the event that the preferred remedy identified in the ROD is no longer feasible or cost effective, the County will propose a new alternative.

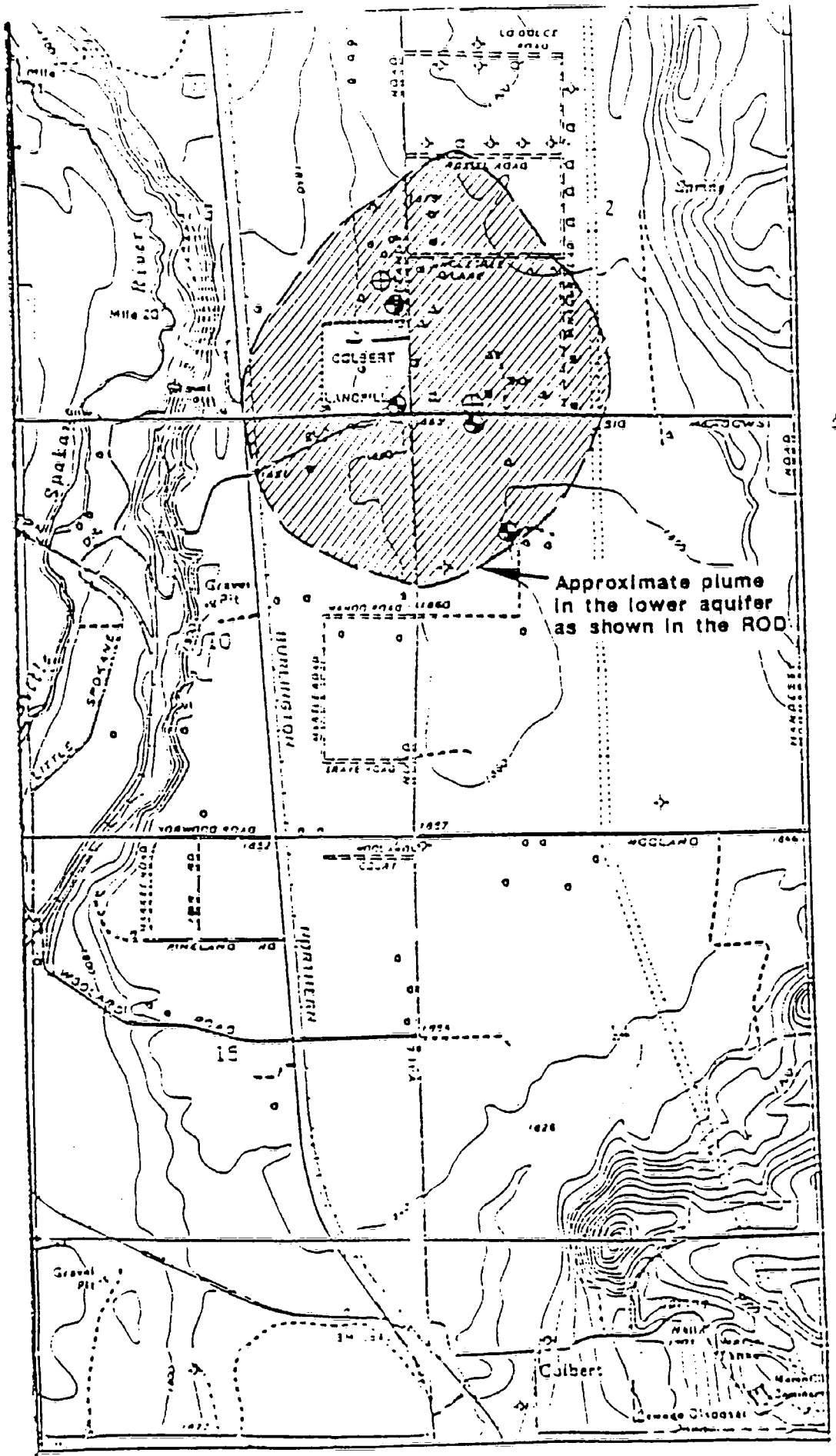
B. East System

1. Introduction -- Previous studies have identified elevated concentrations of contaminants in the vicinity of the Colbert Landfill within the lower aquifer(s). ("Lower aquifer(s)" include the lower sand and gravel, weathered basalt/ Latah, and Latah aquifers). However, data from these studies are insufficient to adequately characterize the nature and define the extent of the contaminant plume. The purpose of Phase I for the lower aquifer(s) north and east of the landfill is to focus on specific design requirements for a Phase II - East ground water extraction and treatment system, and to initiate cleanup in this area. Activities described in this section relate to the lower aquifer(s) immediately to the north and east of the landfill and include: installation of two pilot ground water extraction wells and a common treatment system, installation of a ground water monitoring system to improve definition of the location of the contaminant plume and assess the performance of the pilot systems, assessment of treated water discharge management options, and definition of the Phase II - East ground water extraction and treatment system.

2. Site Investigations --

a. Installation of Monitoring Wells -- A series of nested monitoring wells at four to eight locations will be installed to provide data needed to assess the contaminant distribution in, and hydrogeologic properties of, the lower aquifer(s) for the source control (east) extraction system. These monitoring wells will be installed in phases, first to identify the preferred location of the two pilot extraction wells and later to assess performance of the pilot extraction systems.

Initially, nested monitoring wells will be installed at four locations. The approximate locations are shown on Figure IV-2. The actual locations of the monitoring wells will depend on site access and may vary from the locations shown. Up to three wells will be installed at each monitoring location. These wells will be screened within the following aquifers, if present: the upper sand and gravel aquifer, the lower sand and gravel aquifer, and the weathered basalt/Latah aquifer or the Latah aquifer. These wells will provide data related to contaminant concentration levels, saturated thickness of the aquifer(s), and horizontal and vertical hydraulic gradients, from which the locations and design characteristics of the pilot extraction wells will be determined. If the locations of the pilot extraction wells are found not to be close to one of the initial monitoring wells, a total of up to two additional nests of monitoring wells will be installed near each of the selected pilot extraction well locations. These wells will be used to confirm the final site selections for, and to assess the performance of, the pilot extraction wells after they are installed. Monitoring wells will be constructed of 2-inch Schedule 80 PVC and screened up to a maximum 20 foot length.



Source: Golder Associates, Inc., May 1987.

Phase I - East System

Figure 11

b. Monitoring Well Sampling and Analysis -- Chemical analysis of water samples from the monitoring wells will be used to evaluate contaminant characteristics and other important water quality parameters. Water level measurements will be used to evaluate saturated thickness and vertical and horizontal hydraulic gradients. This information will be used for design, placement, and performance evaluation of the pilot extraction wells and in the design of the Phase II - East treatment and discharge system.

Chemical analyses will focus on the six compounds identified in Table I-1 and will be performed by EPA Method 8010 (SW-846, USEPA, 1986) or equivalent. These compounds are:

1,1,1-trichloroethane (1,1,1-TCA)
1,1-dichloroethylene (1,1-DCE)
1,1-dichloroethane (1,1-DCA)
trichloroethylene (TCE)
tetrachloroethylene (PCE)
methylene chloride (MC)

Other parameters, including, but not limited to, temperature, pH, conductivity, hardness, iron, and manganese may be determined for use during treatment system design activities.

The initial monitoring wells will be sampled after development. Analysis of samples from this effort may be sufficient to identify the final locations of the pilot extraction wells. In the event of anomalies in data from this initial sampling, the County may, at its discretion, conduct follow-up sampling at bi-weekly intervals for verification purposes.

If additional wells are required in the vicinity of the proposed pilot well locations, they will also be sampled after development. Data obtained from these wells will be used to assess performance of the pilot wells. As above, in the event of anomalies in these data, the County may, at its discretion, conduct follow-up bi-weekly sampling and analysis for verification purposes.

During the first month after pumping of the pilot extraction wells begins, samples for chemical analysis will be obtained at least weekly from the pilot extraction wells and at least the two closest monitoring wells. After this initial 4-week period, the pilot extraction wells and the monitoring wells will be sampled and analyzed at least quarterly during operation of the pilot systems.

c. Water Level Monitoring -- Water level monitoring will be conducted in at least the two monitoring wells closest to each of the pilot extraction wells. Data from this effort will be used to assess performance of the pilot extraction wells and further define the hydrogeology of the site. Monitoring will begin before startup of the pilot pumping systems and will

continue until water level conditions stabilize or until it is demonstrated that continuous pumping is not possible. At the County's discretion, private supply wells may be included in this study.

3. **Pilot Extraction Wells** -- Information obtained from the pilot extraction wells is intended for use in the design of a Phase II - East extraction, treatment, and discharge system.

a. Location of the Pilot Extraction Wells -- Pilot extraction wells will be installed to the north and to the east of the landfill. The ground water data from the initial monitoring wells will be used to select the final locations of the pilot wells. The preliminary locations, based on available data, are shown on Figure IV-2.

b. Construction of the Pilot Extraction Wells -- Construction details for the pilot extraction wells will be influenced by information from the initial monitoring wells. It is anticipated that these wells will be constructed using 6- or 8-inch diameter steel casing and stainless steel screen.

c. Pumping of the Pilot Extraction Wells -- The pilot extraction wells will be equipped with a submersible pump. It is anticipated that the well located to the north of the landfill will be capable of providing at least 50 gpm. At the County's discretion, the pumping rate may be increased to 150 gpm if the aquifer is capable of sustained production at that rate. The well located to the east of the landfill may be capable of providing 10 to 50 gpm. The design will be based on a maximum flow of 50 gpm.

d. Duration of Pilot Testing -- It is intended that the pilot extraction wells will operate for at least a 30-day period, and possibly until implementation of the complete Phase II - East system. If appropriate, they will be incorporated into the Phase II - East system.

e. Chemical Analysis of Pilot Well Samples -- Analysis of samples from the pilot extraction wells will be as described in Section IV.B.2b.

4. **Treatment System** -- The treatment system ultimately constructed as part of the Phase II - East system must utilize cost-effective and reliable technology. Cost effectiveness is to be based on long-term operating and maintenance costs as well as the initial installation cost.

A pilot air stripping system will be included as part of the Phase I activities. This system will be capable of handling variable flow rates of up to 200 gpm and discharging water at concentrations that comply with the Table IV-1 evaluation criteria. Samples will be collected at least weekly from the discharge pipe to verify compliance with the Table IV-1 evaluation criteria. This temporary system will not include off-gas

treatment, but will include air monitoring. Final design of this system will be dependent on input water quality characterized by the initial monitoring wells.

5. **Treatment System Water Discharge** -- Discharge will be piped to the Little Spokane River or recharged to the ground water system at the landfill site. Subject to the approval of the Government Plaintiffs, recharge of treated water may be utilized as a mechanism for accelerating cleanup of source areas. Such a system would initially consist of one to three recharge wells located near the east property boundary and screened below the base of the landfill. If appropriate, the system could be expanded during Phase II to other portions of the landfill site.

6. **Study Analysis and Feasibility Evaluation** -- In the event that the preferred remedy identified in the ROD is no longer feasible or cost effective, the County will propose a new alternative.

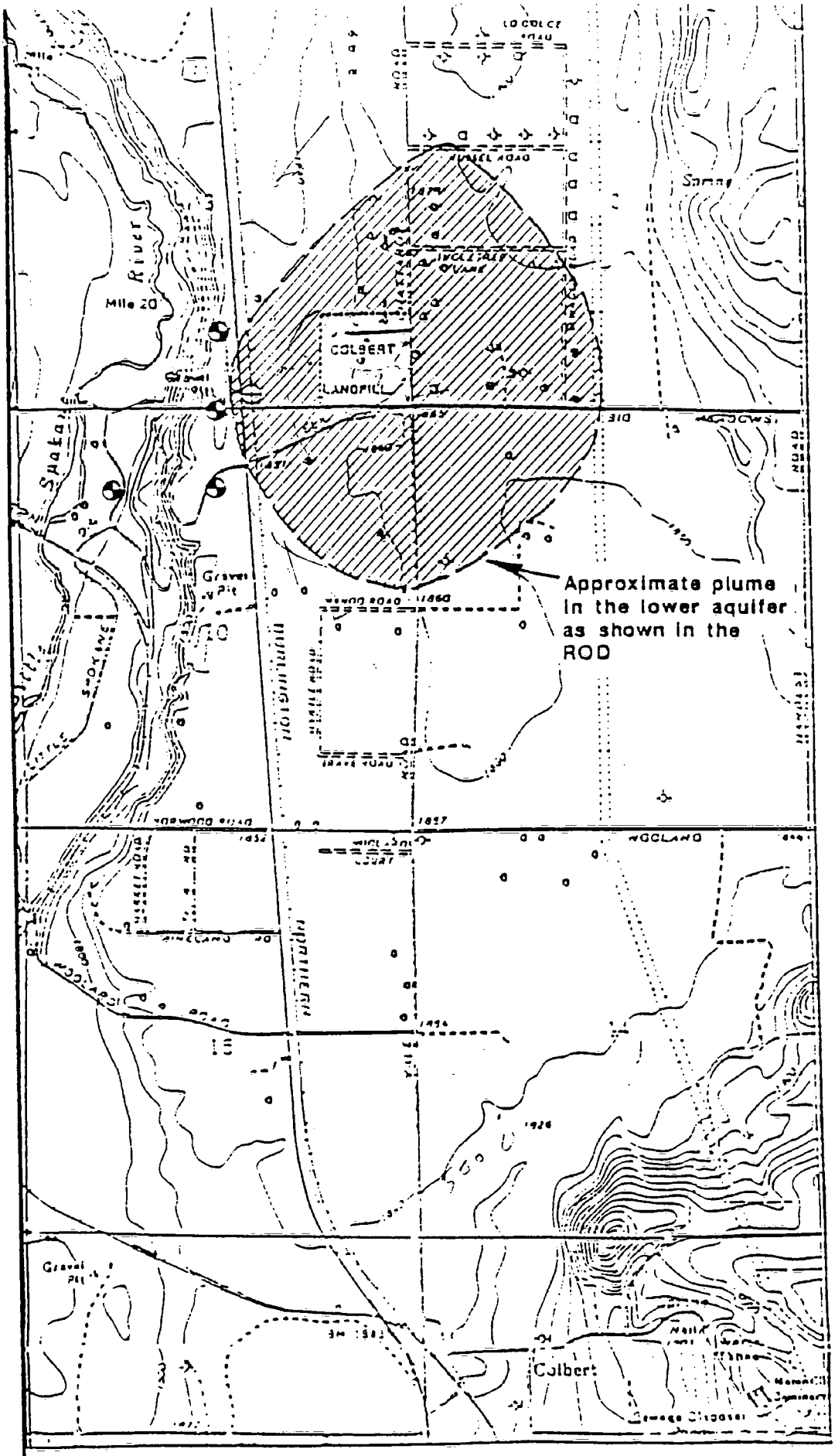
C. West System

1. **Introduction** -- Previous studies of contamination emanating from the Colbert Landfill have identified a contaminant plume moving to the west in the lower aquifer. The location of the plume is based on limited data obtained in late 1985. These data are insufficient to adequately define the extent of the contaminant plume and project the rate or direction of future contaminant migration. The purpose of Phase I for the lower sand and gravel aquifer west of the landfill is to develop specific design requirements for a Phase II - West ground water interception and treatment system, and initiate cleanup in this area. Activities described in this section relate to the lower aquifer west of the landfill and include: installation of a pilot ground water extraction and treatment system; installation of a ground water monitoring system to identify vertical and horizontal hydraulic gradients, determine the current location and distribution of the contaminant plume, and assess the performance of the pilot extraction system; assessment of treated water discharge management options; and definition of a Phase II - West ground water interception and treatment system.

2. **Site Investigations** --

a. Installation of Monitoring Wells -- A series of nested monitoring wells will be installed at four to six locations to provide data needed to assess the contaminant distribution and hydrogeologic properties of the lower aquifer west of the landfill for a system of ground water extraction wells. One to three monitoring wells will be installed at each location. These wells will be installed in phases, first to identify the preferred location of the pilot extraction well and later to assess pilot extraction system performance.

Initially, nested monitoring wells will be installed at approximately the four locations shown on Figure IV-3. The actual locations of the monitoring wells will depend on site access and may vary from the locations shown. All monitoring wells will be completed in the lower sand and gravel aquifer and will provide data related to contaminant concentration levels, vertical contaminant distribution, saturated thickness of the aquifer, and hydraulic gradients, from which the location and design characteristics of the pilot extraction well will be determined. If it is determined that the location of the pilot extraction well is not close to one of the initial monitoring well locations, up to two additional nests of monitoring wells will be installed near the selected pilot extraction well site. These wells will be used to confirm the final site selection for, and to assess the performance of, the pilot extraction well after it is installed. Monitoring wells at each location will be constructed of 2-inch Schedule 80 PVC and screened at incremental depths within the lower sand and gravel aquifer. Each monitoring well will be screened up to a maximum 20 percent of the aquifer thickness.



Source: Golder Associated, Inc., May 1987

Phase I - West System

Figure 2-

b. Monitoring Well Sampling and Analysis -- Chemical analysis of water samples from the monitoring wells will be used to evaluate contaminant characteristics and other important water quality parameters. Water level measurements will be used to evaluate aquifer thickness, vertical and horizontal hydraulic gradients, and the influence of the Little Spokane River on ground water flow. This information will be used for design, placement, and performance evaluation of the pilot extraction well and in the design of the Phase II - West treatment and discharge system.

Chemical analyses will focus on the six compounds identified in Table I-1 and will be performed by EPA Method 8010 (SW-846, USEPA, 1986) or equivalent. These compounds are:

1,1,1-trichloroethane (1,1,1-TCA)
1,1-dichloroethylene (1,1-DCE)
1,1-dichloroethane (1,1-DCA)
trichloroethylene (TCE)
tetrachloroethylene (PCE)
methylene chloride (MC)

Other parameters, including, but not limited to, temperature, pH, conductivity, hardness, iron, and manganese, may be included for use during treatment system design activities.

The monitoring wells at the four initial locations will be sampled after development. Analysis of samples from this effort will be used to identify the final location of the pilot extraction well. In the event of anomalies in data from this initial sampling, the County may, at its discretion, conduct follow-up sampling at bi-weekly intervals for verification purposes.

If necessary, monitoring wells will be installed at up to two additional locations in the vicinity of the proposed pilot extraction well location. These wells will be sampled after development. Data obtained from these wells will be necessary to later assess performance of the pilot extraction well. As above, in the event of anomalies in this data, the County may, at its discretion, conduct follow-up bi-weekly sampling and analysis for verification purposes.

During the first month after pumping of the pilot extraction well begins, samples for chemical analysis will be obtained at least weekly from the pilot extraction well and the two closest monitoring wells. After this initial 4-week period, the pilot extraction well and the monitoring wells will be sampled and analyzed at least quarterly during operation of the pilot system.

c. Water Level Monitoring -- Water level monitoring will be conducted in at least the two monitoring wells closest to the pilot extraction well. Data from this effort will be used to assess the performance of the pilot extraction well and further characterize the hydrogeology of the site. Monitoring will begin before the startup of the pilot pumping system and will continue

until water level conditions stabilize or until it is demonstrated that continuous pumping is not possible. At the County's discretion, private supply wells may be included in this study.

3. **Pilot Extraction Well** -- Information obtained from the pilot extraction well is intended to aid in the design of a Phase II - West interception, treatment, and discharge system.

a. Location of the Pilot Extraction Well -- The pilot extraction well will be installed east of Highway 2 close to the abandoned railroad alignment. The preliminary location, based on available data, is shown on Figure IV-3. In selection of this preliminary site, consideration has been given to the location of the Phase II - West interception system.

b. Construction of the Pilot Extraction Well -- Construction details for the pilot extraction well will be influenced by information from the initial monitoring wells. It is anticipated that this well will be constructed using 6- or 8-inch diameter steel casing and a stainless steel screen. The screen length will be at least 10 feet and will be placed based on vertical contaminant distribution data from nearby monitoring wells.

c. Pumping of the Pilot Extraction Well -- The pilot extraction well will be equipped with a submersible pump. A well at this location should be capable of providing at least 100 gpm. At the County's discretion, the pumping rate may be increased to 200 gpm if the aquifer is capable of sustained production at that rate.

d. Duration of Pilot Testing -- It is intended that the pilot extraction well will operate for at least a 30-day period, and possibly until implementation of the complete Phase II - West system. If appropriate, it will be incorporated into the Phase II - West system.

e. Chemical Analysis of Pilot Well Samples -- Analysis of samples from the pilot-extraction well will be as described in Section IV.C.2b.

4. **Treatment/Discharge System** -- The treatment system ultimately constructed as part of the Phase II - West system must utilize cost-effective and reliable technology. Cost effectiveness is to be based on long-term operating and maintenance costs as well as the initial installation cost.

A pilot gravity air stripping system, utilizing the drop in elevation between the bluff and the Little Spokane River, will be constructed as part of the Phase I activities. This system will operate by discharging pumped water to a ditch and allowing natural and induced aeration to volatilize contaminants. The ditch will be lined with a low permeability geomembrane fabric until the point where concentrations decrease to levels below the

Table IV-1 evaluation criteria. Samples will be collected at least weekly from the discharge to verify compliance with the Performance Standards. The ditch will include energy dissipaters to accelerate volatilization and minimize erosion.

Initially, the gravity air stripping system will be designed to accommodate flow rates of up to 200 gpm, but the ditch may, at the County's discretion, be sized to handle anticipated Phase II - West discharge rates. Final design of this system will depend on input water quality as characterized by the monitoring wells. Field testing during startup may be required to determine the length of geomembrane-lined ditch required to attain the Table IV-1 evaluation criteria. This pilot gravity air stripping system will not include off-gas treatment or air monitoring.

5. **Study Analysis and Feasibility Evaluation** -- In the event that the preferred remedy identified in the ROD is no longer feasible or cost effective, the County will propose a new alternative.

Phase II

A. Extraction, Water Treatment, and Discharge - South System

1. Bases for Design --

a. The goal of the south ground water interception system is to prevent the spread of contaminated ground water downgradient* of the interception system. Both the Government Plaintiffs and the County recognizes that the interception system, during operation, may not capture 100 percent of the plume which contains constituents of concern, but consider it reasonable to design an interception system which approaches this goal.

b. Location of the Interception System -- The ground water interception system will be located based on information developed during Phase I pilot studies. Important considerations in placement of the interception system will include: concentrations and areal distributions of contaminants in the ground water; and hydrogeologic conditions identified during Phase I, such as saturated thickness of the aquifer, hydraulic conductivity, hydraulic gradients, and aquifer boundary conditions.

c. Treatment System -- The treatment system will be designed to meet the Performance Standards at the point of discharge from the treatment system. This design will be based on the maximum anticipated contaminant mass influent rate and treatment efficiency levels demonstrated during Phase I pilot testing. Compliance with applicable air emission standards will be addressed during treatment system design in accordance with the provisions of Section V.D.

d. Cost Effectiveness -- Design of the Phase II interception/treatment/discharge system will also consider cost effectiveness. The minimum level of effort required for the south interception system is prevention of the spread of the constituents of concern at concentrations which exceed the evaluation criteria identified in Table IV-1. The treatment and discharge system must meet the evaluation criteria. The County, at its discretion, may either select proven technology or new technologies which attain these criteria more economically. The system plans will be submitted to the Government Plaintiffs for review and approval.

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* For the purpose of this Scope of Work, the terms upgradient and downgradient refer to the ground water gradient under non-pumping, steady state conditions, unless specifically indicated otherwise.

2. Design Components and Bases for Decision--

a. Monitoring -- The County may, at its discretion, decide, following completion of Phase I, to install up to three additional monitoring wells to better characterize the hydrogeology and contaminant distribution in the shallow aquifer. If so decided, the County will provide plans to the Government Plaintiffs for review, identifying the number and location of additional monitoring wells. Information from these wells would be used to confirm or refine data from Phase I prior to construction of the Phase II system.

As the plan for the Phase II ground water interception system is finalized, a ground water monitoring program will be instituted to evaluate interception system performance. The interception system monitoring wells will consist of at least three, and not to exceed eight, monitoring wells located downgradient of the ground water interception system, and two monitoring wells placed at the outer limit of the interception system. The wells at the outer limits will also serve as extraction wells, if adjustment control criteria (as described in Section V.A.2b) are exceeded in these wells during monitoring. The County will determine if the interception system monitoring wells will include wells installed as part of the Phase I program. Phase I wells not included as interception system monitoring wells will be monitored at the County's discretion. A more extensive monitoring system may be proposed by the County if they determine that additional monitoring is appropriate. Plans for additional monitoring would be provided to the Government Plaintiffs for review and approval.

Chemical analysis for the interception system monitoring wells will be accomplished for the four indicator compounds identified in Table V-1, using EPA Method 8010 (SW-846, USEPA, 1986), on the frequency described in the following paragraph. Methylene chloride and tetrachloroethylene have been excluded from Table V-1 due to the high probability of laboratory contamination for methylene chloride, and the limited distribution in the ground water of both methylene chloride and tetrachloroethylene. Although methylene chloride and tetrachloroethylene do not form the basis for interception system design and operation criteria, they will be included in chemical analysis annually for at least the first five years of system operation. If methylene chloride and/or tetrachloroethylene are detected at concentrations above the Table IV-1 evaluation criteria during Phase I or during annual sampling described in this paragraph, the compounds will be monitored at the frequency of the other compounds listed in Table V-1. After this five-year period, the need for continued analysis for methylene chloride and tetrachloroethylene will be re-evaluated.

TABLE V-1

OPERATIONAL AND ADJUSTMENT CONTROL CRITERIA[a]

Compound	Maximum[b] Operational Control Criteria (ppb)	Maximum[c] Adjustment Control Criteria (ppb)
1,1,1-Trichloroethane	60	130
1,1-Dichloroethylene	N/A[d]	5
1,1-Dichloroethane	1,200	2,600
Trichloroethylene	N/A[d]	4

(a) Maximum criteria are presented in this table. Criteria may be lower than these values, as described in Sections V.A.2b. and V.C.2b. of this Scope of Work.

(b) Operational control criteria as represented by 30 percent of the Table IV-1 evaluation criteria.

(c) Adjustment control criteria as represented by 65 percent of the Table IV-1 evaluation criteria.

(d) Resulting concentration is too low to be accurately quantified using standard laboratory procedures. This constituent will not be included as part of the operational control criteria.

Quarterly sampling and analysis will be conducted for each of the interception system monitoring wells, except that the performance monitoring wells will initially be sampled more frequently as subsequently described in Section V.A.2b. Quarterly sampling of each well will be continued until no exceedance of the operational control criteria (as described in Section V.A.2b) is identified for twelve consecutive quarters. In the event that, for a particular well, no exceedances occur during the twelve quarters, sampling frequency will be reduced to an annual basis for the next two years. If no exceedances have been identified during this five-year period, the County will, with Government Plaintiff's approval, determine whether continued monitoring is appropriate based on the need to assure long-term protection of purveyor wells at the site. If, in a particular monitoring well (or converted extraction well, as described below in Section V.A.2b.), no exceedances occur, but an increasing trend in concentrations is identified that is likely to result in exceedance of the operational control criteria, the County will implement a longer-term sampling and analysis program that assures the protection of human health.

In the event that a single exceedance of an applicable criteria (Table IV-1 or Table V-1) occurs, a follow-up sample will be obtained. An exceedance will be confirmed if concentrations exceeding an applicable criteria are identified in three consecutive samples collected at two-week intervals. If an exceedance is confirmed, the County will submit, for the Government Plaintiffs' review and approval, a program including additional monitoring wells or additional monitoring of existing wells to address the exceedance.

The criteria presented in this section (V.A.2a) applies only to monitoring during system operation. While the interception system is shut off and on standby status, this system operation criteria is superseded by the monitoring criteria described in Section X of this Scope of Work.

b. Interception System -- In order to meet the goals identified in Section V.A.1a, the County will accomplish the following:

- o Conduct the Phase I pilot studies to obtain the needed aquifer characteristics for designing an interception system.

- o Complete a preliminary design engineering report detailing the most probable aquifer characteristics, design parameters and project costs. The system will be designed utilizing capture zone analysis to achieve overlapping cones of depression, and such that the total pumping capability of the interception well system is sufficient to intercept the plume to the extent described within this section (V.A.2b). Selection of pumping test methodologies and capture zone analysis will be

subject to the review and approval of the government plaintiffs.

The extraction wells will be installed near the leading edge of the plume. Extraction wells will be installed in succession from the center to the outermost limits of the plume. The spacing of the wells will be determined by the County based on hydrogeologic and chemical data. Additional wells will be installed until the ground water at the outermost limits is below the adjustment control criteria. The outermost wells will be included as interception system monitoring wells, and will be constructed such that conversion to extraction wells is possible if exceedances of adjustment control criteria are subsequently identified. If an outboard monitoring well is converted to an extraction well, an additional monitoring well (constructed for possible conversion to an extraction well) will be installed to the outside of the converted monitoring/extraction well.

The design criteria will serve as a guide to the use of the aquifer capture analysis referred to earlier in this section. The basis for the south interception system design will be that the average concentrations of the contaminants of concern in the upper aquifer downgradient of the interception system are predicted to be no greater than 15 percent of the Table I-1 Performance Standards based on capture zone analysis.

Commencing at a mutually agreed upon time following startup of the interception system, the downgradient interception system monitoring wells will be sampled monthly (for Table V-1 constituents) for two years, or some other mutually agreed-upon length of time. The Government Plaintiffs will select at least three, and not to exceed eight, of these downgradient wells for use as performance monitoring wells. These wells will be selected to provide a representative sampling of constituent concentrations across the full width of the interception system. Based on statistical analysis of the chemical data from these performance monitoring wells, a baseline concentration* will be identified for each Table V-1 constituent. This baseline concentration will be equal to the average of the time-averaged concentrations in the three (or more) performance monitoring wells after the data associated with the expected gradual changes following startup are eliminated.

Operational control criteria for the south interception system will be developed for the appropriate indicator compounds (1,1,1-TCA and 1,1-DCA) from Table V-1 and will be equal to the lesser of: 1) the baseline concentration plus 15 percent of the Table IV-1 evaluation criteria or 2) 30 percent of the Table IV-1

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* If the resulting concentration is below the Practical Quantitation Limit (PQL) for a Table I-1 constituent, the PQL reported for EPA Method 8010 (USEPA, "Test Methods for Evaluating Solid Waste," SW-846, 3rd Ed. 1986) will be used as the baseline concentration for that constituent.

evaluation criteria. If, after confirmation (as defined in Section V.A.2a) the average concentration in the three performance monitoring wells exceeds the operational control criteria, the County will re-evaluate the operation of the interception system. Should this re-evaluation indicate adjustments to the system are appropriate, the County will submit a proposal for interception system adjustment to the Government Plaintiffs for review and approval. Adjustments may include increasing pumping rates (for one or more wells), or other adjustments to the existing system considered appropriate for improving interception system efficiency.

Adjustment control criteria for the south interception system will be developed for the indicator compounds from Table V-1 and will be equal to the lesser of: 1) the baseline concentration plus 50 percent of the Table IV-1 evaluation criteria or 2) 65 percent of the Table IV-1 evaluation criteria.

If after confirmation (as defined in Section V.A.2a), the average concentration in the three designated downgradient monitoring wells exceeds the adjustment control criteria for two consecutive quarters (or some other mutually agreed-upon timeframe that will better allow reflection of system adjustments in downgradient monitoring wells) following system adjustment (as described previously for operational control criteria exceedances), the interception system will be modified. Additionally, the interception system will be modified if any individual downgradient performance monitoring well exceeds the Table IV-1 evaluation criteria for two consecutive quarters (or other time period, as described above). Modifications may include increasing pumping rates (for one or more wells), adding extraction wells to the system, or other methods of correcting interception system deficiencies. The County will submit a proposal for interception system modifications to the Government Plaintiffs for review and approval.

In addition to the operation and adjustment control criteria described above, should any downgradient performance monitoring well, following the development of baseline concentrations, exhibit anomalous concentrations or trends in concentrations that are inconsistent with effective interception system performance (such as an increasing trend in concentration projected to lead to a long-term exceedance of the Table V-1 adjustment control criteria), the County will evaluate the operation of the interception system. This evaluation will address the potential cause(s) of the anomaly and possible system adjustments or modifications (if appropriate), and will be presented to the Government Plaintiffs in a written report for their review within 60 days of evaluation.

Prior to establishing baseline concentrations, the operational and adjustment control criteria for the interception system will be the Table IV-1 evaluation criteria. These criteria will be applied on an individual basis to each downgradient interception system monitoring well.

If it is determined by the County that an exceedance of the above criteria is the result of supply well interference with the interception system, adjustment to, or modification to, the system will include elimination of the interference. Elimination of the interference may require either partial or complete cessation of supply well use. The County will attempt to negotiate a settlement with the well owner. If an equitable agreement cannot be reached between the County and the well owner, the Government Plaintiffs may use their statutory authority to seek termination of usage for the interfering well.

Based on cost effectiveness or a determination by the County that acceleration of the cleanup is appropriate, the County may, at its discretion, propose additional upgradient extraction wells. Any such proposal will be submitted to the Government Plaintiffs for review and approval.

If ground water withdrawn by an extraction well meets the operational control criteria for two consecutive quarterly samplings, water from this well will not require treatment prior to discharge. If a subsequently confirmed exceedance of the operational control criteria is identified, treatment of water from the extraction well will be resumed.

Operation of an extraction well may be discontinued if ground water from that well meets the adjustment control criteria. If shutdown of the well thereby occurs, the well will be sampled as described above in Section V.A.2a for monitoring wells. If a subsequently confirmed exceedance of the adjustment control criteria or an identified trend of increasing chemical concentrations occurs that is projected to lead to an exceedance of the adjustment control criteria, the extraction well will be reactivated.

If contaminant concentrations in ground water entering an extraction well decrease (confirmed as described in Section V.A.2a for exceedances) to levels below the Table IV-1 evaluation criteria, pulse pumping may be initiated at the discretion of the County. Procedures for pulse pumping, which are protective of human health and the environment, will be provided to the Government Plaintiffs for review and approval.

c. Treatment System -- A water treatment system utilizing air stripping, designed to treat water to comply with the Performance Standards, will be installed. The treatment system design will use data developed during the Phase I pilot program. A facilities plan will be developed by the County and provided to the Government Plaintiffs for review and approval. The County may, at its discretion, select treatment system performance goals which provide a higher discharge water quality than that identified by the Performance Standards. Compliance with applicable air emissions standards is addressed in Section V.D.

In the event that water discharged from the treatment system exceeds the Table IV-1 evaluation criteria, necessary improvements or operational adjustments will be accomplished by the County after review and approval by the Government Plaintiffs. In the event that the treatment system cannot meet the Table IV-1 evaluation criteria for methylene chloride, the Government Plaintiffs may apply less stringent evaluation criteria for this constituent. Indicated exceedances will be confirmed using the same methodology described for monitoring wells in Section V.A.2a.

d. Discharge -- Disposal of treated water will be in a manner that meets the Table IV-1 evaluation criteria. Options include discharge to the Little Spokane River, discharge to Deep Creek, or recharge to the shallow aquifer (either upgradient or downgradient of the interception system). Discharge to Deep Creek and recharge to the shallow aquifer will require the specific approval of the Government Plaintiffs. Plans for the discharge system will be submitted to the Government Plaintiffs for review and approval.

B. Extraction, Water Treatment, and Discharge - East System

1. Bases for Design --

a. Performance Standards for Ground Water -- The east ground water extraction system is intended for source control near the landfill site and not as an interception system.

b. Location of the East Source Control System -- The source control extraction system will be located based on information developed during Phase I pilot studies. Important considerations in placement of the extraction system will include concentrations and areal distributions of contaminants in the ground water; and hydrogeologic conditions such as saturated thickness of the aquifer(s), hydraulic conductivity, horizontal and vertical hydraulic gradients, and aquifer boundary conditions.

c. Treatment System -- The treatment system will be designed to meet the Performance Standards at the point of discharge from the treatment system. This design will be based on the maximum anticipated contaminant mass influent rate and treatment efficiency levels demonstrated during Phase I pilot testing. Compliance with applicable air emission standards is addressed in Section V.D.

d. Cost Effectiveness -- Design of the Phase II - East extraction/treatment/discharge system will also consider cost effectiveness. The extraction/treatment/discharge system must meet the Table IV-1 evaluation criteria with respect to treatment and discharge. The County may, at its discretion, either select proven technology or new technologies which more economically attain these criteria. The system plans will be submitted to the Government Plaintiffs for review and approval.

2. Design Components and Bases for Decision--

a. Monitoring -- The east extraction system is intended for source control and not plume interception. Consequently, no performance monitoring is required beyond that which is considered necessary by the County to evaluate treatment efficiency and to demonstrate the cost effectiveness of continued operation of the east system as a Remedial Action component for the lower aquifer(s). Phase I - East monitoring wells will be monitored at the discretion of the County.

In the event that monitoring wells upgradient of the extraction system, and outside its capture zone, show a consistent rise in contaminant concentrations that is likely to result in exceedance of the Table IV-1 evaluation criteria, additional upgradient (as previously defined) monitoring will be accomplished. The County will select the number and location of additional monitoring wells, subject to review and approval by the Government Plaintiffs. The County will determine if existing wells will be used or new monitoring wells will be installed.

The criteria presented in this section (V.B.2a) applies only to monitoring during system operation. This criteria is superseded, once the system is shut off, by the monitoring criteria described in Section X of this Scope of Work.

b. Source Control System -- The County will propose a source control system that includes six or more extraction wells. These wells will be installed to the north and to the east of the landfill site at locations exhibiting elevated contaminant concentrations and adequate hydrogeologic properties for sustained extraction at or near the flow rates set forth in the ROD. As presently envisioned by the County, the system will include at least three extraction wells to the north and three to the east of the landfill. The locations and flow rates of these wells will be determined by the County from Phase I study data and additional monitoring well data. The design for this system will be provided to the Government Plaintiffs for review and approval.

Based on the following criteria, the County may, at its discretion, expand the source control system beyond six extraction wells: aquifer yield; potential contaminant spreading induced by the addition of extraction wells; impact of increased contaminant mass loading to the treatment facility on meeting the Table IV-1 evaluation criteria; and system redundancy with respect to the west interception system and the objectives of the lower aquifer(s) Remedial Action.

Operation of an extraction well may be discontinued, upon approval of the Government Plaintiffs, if the well is not yielding, on a continuous basis, at least 50 percent (20 gpm) of the average discharge rate described in the ROD. If pumping is terminated for an extraction well, that well may, at the County's discretion, be included in the lower aquifer(s) monitoring program.

If deemed appropriate by the County, extraction wells may be subjected to pulse pumping rather than continuous pumping. Plans for pulse pumping will be submitted to the Government Plaintiffs for review and approval.

If ground water withdrawn by an extraction well meets the Table V-1 operational control criteria for two consecutive quarterly samplings, water from this well will not require treatment prior to discharge. If a subsequently confirmed exceedance of the operational control criteria is identified, treatment of water from the extraction well will be resumed.

Pumping may be discontinued from extraction wells if it is determined by the County, with review and approval by the Government Plaintiffs, that continued operation of the well(s) is no longer cost effective. Cost effectiveness will be evaluated based on the extent to which the extraction well(s) are achieving

the system goal of source control, and whether it is cost effective to extract contamination near the source rather than at the west interception system.

c. Treatment System -- A water treatment system utilizing air stripping, designed to treat water to comply with the Performance Standards, will be installed. The treatment system design will use data developed during the Phase I pilot program. A facilities plan will be developed by the Count and provided to the Government Plaintiffs for review and approval. The County, at its discretion, may select treatment system performance goals which provide a higher discharge water quality than that identified by the Performance Standards. Compliance with applicable air emissions standards is addressed in Section V.D.

In the event that water discharged from the treatment system exceeds the Table IV-1 evaluation criteria, necessary improvements or operational adjustments will be accomplished by the County after review and approval by the Government Plaintiffs. Indicated exceedances will be confirmed by follow-up sampling and analysis using the same methodology described for monitoring wells in Section V.A.2.a.

In the event that the treatment system cannot meet the Table IV-1 evaluation criteria for methylene chloride, the Government Plaintiffs may apply less stringent evaluation criteria for this constituent. Indicated exceedances will be confirmed using the same methodology described for monitoring wells in Section V.A.2a.

d. Discharge -- Disposal of treated water will be in a manner that meets the Table IV-1 evaluation criteria. The County will choose the specific means of disposal; options include discharge to the Little Spokane River and recharge at or near the landfill site. The viability of treated water recharge at or near the landfill site will be evaluated by the County and may include consideration of cleanup acceleration resulting from contaminant flushing within the unsaturated zone, and the potential impact of increased contaminant loading on treatment system performance. If this evaluation confirms the viability of recharge, the County will submit a plan to the Government Plaintiffs for their review and approval.

C. Extraction, Water Treatment, and Discharge - West System

1. **Bases for Design --**

a. The goal of the west ground water interception system is to prevent the spread of contaminated ground water downgradient of the interception system. Both the Government Plaintiffs and County recognize that a higher level of protection is appropriate for that portion of the lower aquifer (downgradient of the interception system) within the zone of capture of existing supply wells, than for that portion of the aquifer downgradient of the interception system where contaminants can migrate directly to the Little Spokane River without impacting existing supply wells.

b. Location of the Interception System -- The ground water interception system will be located east of Highway 2 in proximity to the north-south alignment shown in the ROD.

c. Treatment System -- The treatment system will be designed to meet the Performance Standards at the point of discharge from the treatment system. This design will be based on the maximum anticipated contaminant mass influent rate and treatment efficiency levels demonstrated during Phase I pilot testing. Compliance with applicable air emission standards will be addressed during treatment system design in accordance with the provisions of Section V.D.

d. Cost Effectiveness -- Design of the Phase II interception/treatment/discharge system will also consider cost effectiveness. The minimum level of effort required for the west interception system is prevention of the spread of the constituents of concern at concentrations which exceed the evaluation criteria identified in Table IV-1. The treatment and discharge system must meet these evaluation criteria. The County, at its discretion, may either select proven technology or new technologies which more economically attain these criteria. The system plans will be submitted to the Government Plaintiffs for review and approval.

2. **Design Components and Bases for Decision--**

a. Monitoring -- A monitoring program will be instituted to evaluate the Phase II interception system performance. Two sets of monitoring wells will be included in the west interception system performance monitoring program. The first set (set A) of monitoring wells will be utilized for evaluation of interception system performance for those portions of the lower aquifer within the capture zone of existing supply wells located downgradient of the interception system, and will consist of three monitoring wells located directly upgradient of the existing supply wells. The second set (set B) of monitoring wells will be utilized for evaluation of interception system performance for those portions of the lower aquifer not directly impacting the water quality of the existing supply wells, and

will include three monitoring wells located downgradient of the interception system. Two additional monitoring wells placed at the outboard limit of the interception system will also be included in the interception system monitoring program. These outboard wells may also serve as extraction wells, if adjustment control criteria (as described in Section V.C.2b) are exceeded during monitoring.

The monitoring system may, at the discretion of the County, include new wells or, if appropriate, wells installed as part of the Phase I program. Phase I wells not included in the interception system performance monitoring program will be monitored at the County's discretion. A more extensive monitoring system may be proposed by the County if they determine that additional ground water monitoring is appropriate. Plans for additional monitoring would be provided to the Government Plaintiffs for review and approval.

Quarterly sampling and analysis will be conducted for each of the interception system monitoring wells, for the four indicator compounds shown in Table V-1 and discussed in Section V.A.2a, except the performance monitoring wells (sets A and B) will initially be sampled more frequently as subsequently described in Section V.C.2b. Quarterly sampling for each well will be continued until no exceedance of the Table V-1 adjustment control criteria is identified for twelve consecutive quarters. In the event that, for a particular well, no exceedances occur during the twelve quarters, sampling will be reduced to an annual frequency for the next two years. If no exceedances have been identified during this five-year period, the County will determine whether continued monitoring is appropriate based on the need to assure longer-term protection of purveyor wells near the site. If no exceedances occur in a particular monitoring well (or converted extraction well, as described in Section V.C.2b), but an increasing trend in concentrations is identified that would likely result in exceedance of the adjustment control criteria, the County will implement a longer-term sampling and analysis program that assures the protection of human health and the environment.

In the event that a single exceedance of the adjustment control criteria occurs, a follow-up sampling will be accomplished. An exceedance will be confirmed if concentrations exceeding the adjustment control criteria specified in Table V-1 are identified in three consecutive samples collected at two-week intervals. If an exceedance is confirmed, the Government Plaintiffs may require installation of additional monitoring wells or implementation of more extensive monitoring of existing wells. Further, the County will submit, for the Government Plaintiffs' review and approval, a program to address the exceedance. This program will include measures to protect human health and the environment.

The criteria presented in this section (V.C.2a) applies only to monitoring during system operation. While the interception

system is shut off and on standby status, this system operation criteria is superseded by the monitoring criteria described in Section X of this Scope of Work.

b. Interception System -- In order to meet the goals identified in Section V.A.1a, the County will accomplish the following:

- o Conduct the Phase I pilot studies to obtain the needed aquifer characteristics for designing an interception system.

- o Complete a preliminary design engineering report detailing the most probable aquifer characteristics, design parameters and project costs. The system will be designed utilizing capture zone analysis to achieve overlapping cones of depression, and such that the total pumping capability of the interception well system is sufficient to intercept the plume to the extent described in this section. Selection of pumping test methodologies and capture zone analysis will be subject to the review and approval of the Government Plaintiffs.

These extraction wells will be installed east of Highway 2 in proximity to the north-south alignment shown in the ROD. Extraction wells will be installed in succession from the center to the outermost limits of the plume. The spacing of the wells will be determined by the County based on hydrogeologic and chemical data. Extraction wells will be installed until the ground water at the outermost limits of the system is below the adjustment control criteria. The outermost wells will be used for interception system monitoring and will be constructed such that conversion to extraction wells is possible if exceedances of adjustment control criteria are subsequently identified. If an outboard monitoring well is converted to an extraction well, an additional monitoring well (constructed for possible conversion to an extraction well) will be constructed to the outside of the converted monitoring/extraction well.

Interception system design criteria will be based on the Table I-1 Performance Standards. Operational and adjustment criteria will be developed based on Table IV-1 evaluation criteria and observed interception system efficiency during the early stages of Phase II.

The design criteria will serve as a guide for the use of the capture analysis referred to in this section. The basis for design of that portion of the west system that intercepts ground water migrating into the capture zone(s) of existing downgradient supply wells will be that the average concentrations of the constituents of concern in the existing supply wells downgradient of the interception system are predicted to be no greater than 15 percent of the Table I-1 Performance Standards based on capture

zone analysis. The remainder of the system will be designed such that the average concentrations of constituents of concern in the lower aquifer downgradient of the interception system will be no greater than 50 percent of the Table I-1 Performance Standards.

Commencing at a mutually agreed-upon time following startup of the interception system, the two sets (A and B) of downgradient performance monitoring wells will be sampled monthly (for Table V-1 constituents) for two years, or some other mutually agreed-upon length of time. Based on statistical analysis of the chemical data from these wells, separate baseline concentrations* will be identified for each set (A and B) of downgradient performance monitoring wells for each Table V-1 constituent. The baseline concentrations for each set (A and B) of monitoring wells will be equal to the average of the time-averaged concentrations in the three performance monitoring wells associated with that set and, if appropriate, may include vertical averaging for nested wells or well clusters, after the data associated with the expected gradual changes following startup are eliminated.

Operational control criteria for the west interception system will be developed for the appropriate Table V-1 indicator compounds (1,1-TCA and 1,1-DCA) and will only apply to that portion of the system intercepting ground water migrating towards existing downgradient supply well capture zones and will be equal to the lesser of: 1) the baseline concentration based on the "A" set of monitoring wells plus 15 percent of the Table IV-1 evaluation criteria or 2) 30 percent of the Table IV-1 evaluation criteria. If, after confirmation (as defined in Section V.A.2a) the average concentration in the "A" set of performance monitoring wells exceeds the operational control criteria, the County will re-evaluate the operation of the interception system. Should this re-evaluation indicate adjustments to the system are appropriate, the County will submit a proposal for interception system adjustment to the Government Plaintiffs for review and approval. Adjustments may include increasing pumping rates (for one or more wells), or other adjustments to the existing system considered appropriate for improving contaminant interception efficiency.

Adjustment control criteria for the west interception system will be developed for the Table V-1 indicator compounds and will be equal to the lesser of: 1) the baseline concentration (for set "A" or "B monitoring wells", as appropriate) plus 50 percent of the Table IV-1 evaluation criteria or 2) 65 percent of the Table IV-1 evaluation criteria.

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* If the resulting concentration is below the Practical Quantitation Limit (PQL) for a Table I-1 constituent, the PQL reported for EPA Method 8010 (USEPA, "Test Methods for Evaluating Solid Waste," SW-846, 3rd Ed. 1986) will be used as the baseline concentration for that constituent.

If after confirmation (as defined in Section V.A.2a), the average concentration in either the "A" or "B" sets of downgradient monitoring wells exceeds the adjustment control criteria for two consecutive quarters (or some other mutually agreed upon timeframe that will better allow reflection of system adjustments in downgradient monitoring wells) following system adjustment (as described previously for operational control criteria exceedances), the interception system will be modified if applicable. Additionally, the interception system will be modified if any Set "A" individual downgradient performance monitoring well exceeds the Table IV-1 evaluation criteria for two consecutive quarters (or other time period, as described above). Modifications may include increasing pumping rates (for one or more wells), adding extraction wells to the system, or other methods of correcting interception system deficiencies. The County will submit a proposal for interception system modification to the Government Plaintiffs for review and approval.

In addition to the operation and adjustment control criteria described above, should any set "A" downgradient performance monitoring well, following the development of baseline concentrations, exhibit anomalous concentrations or trends in concentrations inconsistent with effective interception system performance (such as an increasing trend in concentration projected to lead to a long-term exceedance of the Table V-1 adjustment control criteria), the County will evaluate the operation of the interception system. This evaluation will address the potential cause(s) of the anomaly and possible system adjustments or modifications (if appropriate), and will be presented to the Government Plaintiffs in a written report for their review within 60 days of the evaluation.

If it is determined by the County that an exceedance of the above criteria is the result of supply well interference with the interception system, adjustment to, or modification to, the system may include elimination of the interference. Elimination of the interference may require either partial or complete cessation of supply well use. The County will attempt to negotiate a settlement with the well owner. If an equitable agreement cannot be reached between the County and the well owner, the Government Plaintiffs will use their statutory authority to seek termination of usage for the interfering well.

Based on cost effectiveness or a determination by the County that acceleration of the cleanup is appropriate, the County may, at its discretion, propose additional upgradient extraction wells. Any such proposal will be submitted to the Government Plaintiffs for review and approval.

If ground water withdrawn by an extraction well meets the operational control criteria for two consecutive quarterly samplings, water from this well will not require treatment prior to discharge. If a subsequently confirmed exceedance of the operational control criteria is identified, treatment of water from the extraction well will be resumed.

Operation of an extraction well may be discontinued if ground water at that well meets the adjustment control criteria. If shutdown of the well thereby occurs, the well will be sampled as described above in Section V.C.2a for monitoring wells. If a subsequently confirmed exceedance, or an identified trend of increasing chemical concentrations occurs that can be projected to lead to an exceedance, of the adjustment control criteria at downgradient supply wells, reactivation of the extraction well may be necessary.

If concentrations in ground water entering an extraction well decrease (confirmed as described in Section V.B.2a for exceedances) to levels below the Table IV-1 evaluation criteria, pulse pumping may be initiated at the discretion of the County. Procedures for pulse pumping, which are protective of human health and the environment, will be provided to the Government Plaintiffs for review and approval.

c. Treatment System -- A water treatment system utilizing air stripping, designed to treat water to comply with the Performance Standards, will be installed. The treatment system design will use data developed during the Phase I pilot program.

If water discharged from the treatment system exceeds the Table IV-1 evaluation criteria, necessary improvements or operational adjustments will be accomplished by the County after review and approval by the Government Plaintiffs. In the event that the treatment system cannot meet the Table IV-1 evaluation criteria for methylene chloride, the Government Plaintiffs may apply less stringent evaluation criteria for this constituent. Indicated exceedances will be confirmed using the same methodology described for monitoring wells in Section V.C.2a.

A gravity air stripping system, which takes advantage of the elevation drop between the bluff near Highway 2 and the Little Spokane River may be installed, if Phase I pilot system test results indicate this method will meet Table IV-1 evaluation criteria. If, based on the criteria identified in Section V.D., off-gas treatment is required, a conventional air stripping system will be installed.

d. Discharge -- Disposal of treated water will be to the Little Spokane River. Discharge water will meet the Table IV-1 evaluation criteria. Plans for the discharge system will be submitted to the Government Plaintiffs for review and approval.

D. Air Emissions Abatement

The necessity for air stripping tower off-gas abatement during Phase II will be evaluated based on the assessment of lifetime cancer risk for carcinogenic compounds, and on hazard indices for non-carcinogenic compounds, in accordance with methods described in the Superfund Public Health Evaluation Manual (EPA 54011-86/060, 1986). Phase I data, and the criteria described below, will be used in these evaluations during Phase I. Additional data developed during the early stages of Phase II will be used to reassess the Phase I evaluation. If the County can demonstrate to the Government Plaintiffs that the lifetime cancer risks and the hazard indices are below 10^{-6} and 1, respectively, off-gas treatment will not be required.

A preliminary analysis of air emissions for the Table I-1 compounds has been accomplished using a standard Gaussian plume model and 100 percent transfer efficiency (water to air media). The analysis considered receptor distances of 500 and 1000 feet, a stack height of 40 feet, and assumed that all water treatment would be accomplished at one location. The analysis used National Weather Service Wind Data for the Spokane International Airport and an initial mass flux to the stripping towers equal to that arrived at from the projected influent concentrations and pumping rates identified in the RI/FS. It was further assumed that the total mass of each constituent removed during the clean-up could be equal to as much as 5 times the mass of each constituent identified as being present in the ground water, based on the data contained in the RI/FS.

Based on these assumptions, the model predicts that for the carcinogenic and potential carcinogenic compounds (TCE, DCE, PCE, and MC) the summation of the incremental increases in cancer risk for the individual compounds is below 10^{-5} (1 in 1 million), and the hazard index summation for all Table I-1 non-carcinogenic compounds is below 1. Because the analysis utilized some assumptions which have not been fully confirmed at the site, the following verification steps will be taken:

1. Air monitoring and modeling will be conducted during Phase I to confirm the wind speed, wind direction, and applicability of the Gaussian model. If the County determines that air emissions can be better analyzed using a different model, the proposed model, and rationale for its use, will be submitted to the Government Plaintiffs for review and approval.

2. Phase I and Phase II data will be evaluated to estimate the total mass of the six indicator constituents present in the ground water.

3. Measurements will be made during Phase I and the early stages of Phase II to identify the mass flux of the six

indicator constituents to the stripping tower(s). These data will be compared with the flux rates identified in the RI/FS.

If the new information supports the initial analysis, air stripping tower off-gas abatement will not be required.

If the Phase I data does not support the initial analysis, the County will re-examine the need for Phase II off-gas treatment. This re-examination will be accomplished prior to Phase II and presented to the Government Plaintiffs for their review and approval. Should this re-examination identify that off-gas treatment is necessary on either a temporary or permanent basis, based on the criteria described above, the County will make the appropriate adjustments to incorporate carbon absorption, or some other agreed-upon method of air emissions abatement, in the stripping tower design for Phase II.

Air emissions abatement will be re-evaluated during the early stages of Phase II (within a year of Phase II startup). If the Phase II data do not support the Phase I analysis, the County will re-examine the need for off-gas treatment within 60 days of re-evaluation and submit such re-examination to the Government Plaintiffs for review and approval. Should this re-examination identify that off-gas treatment is necessary on either a temporary or permanent basis, based on the criteria described above, the County will retrofit the stripping tower(s) with carbon absorption, or some other agreed-upon method of air emissions abatement. Alternately, should this re-examination identify that off-gas treatment is no longer necessary (if required following Phase I analysis), off-gas treatment may be terminated.

VI

LANDFILL CLOSURE

The Colbert Landfill will be closed by Spokane County to meet the goals and objectives of the State Minimum Functional Standards (WAC 173-304) for landfill closure, including regrading, ground water and gas monitoring, capping, and post-closure maintenance. The primary purposes of the cap are to: reduce the potential for infiltration and, thus, reduce the rate of leachate generation; address vector control; and restrict human access. The Minimum Functional Standards normally require at least 2 feet of 1×10^{-6} cm/sec or lower permeability soil or equivalent to be used for the cap. An artificial impermeable membrane, at least 50 mils thick, may be substituted for the soil cover.

Although a low permeability cap is generally beneficial for closure of municipal landfills, such a cap may reduce the migration of contaminants to the interception system(s), and thereby impede the performance of the Remedial Action. Section 173-304-700 of the Minimum Functional Standards provides for the jurisdictional health department to grant variances from landfill closure requirements for those situations where compliance with the regulation would be detrimental without equal or greater benefit to the public. Spokane County will have the option to appeal to the Spokane County Health District to defer or eliminate the need for the low-permeability cap. The County will, at a minimum, maintain a sufficient soil cover to address vector control and restrict human access to the solid waste.

The County shall develop a covenant to be filed on record restricting the use of Colbert Landfill so as not to impair the functioning of any cover that may be placed on the landfill. The covenant shall be reviewed and approved by the Government Plaintiffs.

VII

DOMESTIC WELL MONITORING

Monitoring of domestic wells in the vicinity of the Colbert Landfill will be conducted to evaluate the progress of the Remedial Action and to identify wells that exceed Performance Standards, so that alternative drinking water supplies may be provided (see Section VIII - Alternative Water Supply). The domestic well monitoring program described in this section is a continuation of the domestic well sampling program currently being accomplished by the County. This program is being conducted under the review of the Colbert Landfill Ground Water Sampling Committee.

SAMPLING AND ANALYSIS PROCEDURES

The ground water sampling and analysis procedures for domestic well monitoring will be those in use by the Colbert Landfill Ground Water Sampling Committee at the date of entry of this Consent Decree. Changes to these sampling and analysis procedures will not be made without the approval of this committee and the County. Any changes will be submitted to the Government Plaintiffs for their concurrence.

SAMPLING FREQUENCY

Ground water samples, at a minimum, will be collected annually from all wells included in the domestic well monitoring program. More frequent samples may be collected from selected wells at the discretion of Colbert Landfill Ground Water Sampling Committee and the County. If concentrations in any well exceed Performance Standards, that residence will be evaluated for an alternative water supply in accordance with Section VIII (Alternative Water Supply) of this Scope of Work. Sampling of a water supply well may be discontinued or reduced by the County if:

1. An alternative water supply has been provided for that residence;

2. The Colbert Landfill Ground Water Sampling Committee determines that the supply well is not threatened by contamination from the Colbert Landfill site;

3. Remedial Actions have been demonstrated to be complete.

VIII

ALTERNATIVE WATER SUPPLY

If any compound originating from the site is identified in any domestic water supply well in use prior to the date of entry of this Consent Decree at a concentration exceeding the Performance Standards, a new sample shall be taken by the County within one week of receipt of the analysis of the first sample. The new sample shall be analyzed on an expedited schedule. If the second sample confirms that the concentrations exceed Performance Standards, the County will promptly provide an alternative drinking water supply source to the residence. At the County's discretion, the new water supply may include, but is not limited to, either bottled water (on an interim basis) or connection of the affected residence to the Whitworth Water Supply System or an approved Class IV system. The County shall be responsible only to provide a drinking water supply to those impacted residences in an amount equal to the drinking water supply standards for residences established by the Department of Social and Health Services in effect at the time of entry of this Consent Decree, or the annual average production of the well, whichever is less.

If any compound originating from the site is identified in any domestic water supply well in use prior to the date of entry of this Consent Decree at a concentration exceeding 65 percent of the Table IV-1 evaluation criteria, a new sample shall be taken by the County within one month of receipt of analysis of the first sample. The new sample shall be analyzed within one month. If the second sample confirms that the concentration exceeds the 65 percent level, that supply well shall be placed on a sampling frequency of once every month for a period of one year. The confirming sample and subsequent monthly samples (if required) will be analyzed in accordance with the procedures set forth in the applicable (Phase I or Phase II) ground water monitoring work plan.

If the average concentration over that 12 month period exceeds 65 percent of any of the Table IV-1 evaluation criteria, the County will provide an alternate water supply to that residence. If the average concentration is below the 65 percent level, that well may be returned to the regular monitoring schedule. Without admitting any legal obligation to do so, the County will provide an alternate water supply to the following residences, if desired: (b) (6)

In the event that operation of the Remedial Action adversely impacts the yield of supply wells in use prior to the date of entry of this Consent Decree, the County will mitigate the impact. For this purpose, adverse impact is defined as a reduction in water supply to levels below the lesser of:

1. The discharge rate and total allowable annual volume defined by a valid water right, filed with the State of Washington prior to entering of this Consent Decree.

   If water is being used without a valid water right, the user will only be entitled to mitigation with respect to the quantity defined by the laws of the State of Washington as being exempt from the filing requirements.

2. The capacity of the supply well in gallons per day.

In order to require the County to mitigate such adverse impacts, the following conditions must be met:

1. Access to the impacted well must be granted by the property owner to the County prior to and during the implementation of the Remedial Action. The County may, at its discretion: a) monitor water level elevations within the well; b) measure the well depth; c) accomplish a well capacity test; and/or d) accomplish any other tasks, procedures or tests deemed appropriate by the County or required by the Government Plaintiffs to evaluate the possible future impact of the Remedial Action.

2. In the event that the County chooses not to monitor a well and a claim is subsequently made by the property owner alleging adverse impact by the Remedial Action, the owner may be requested to sign an affidavit detailing the extent of the impact.

If it is determined that a supply well has been adversely impacted by the Remedial Action, the County may, at their discretion, elect to take any of the following actions:

1. Provide an alternative water supply;

2. Modify the operation of the extraction wells;

3. Modify the supply well system. Modifications may include repositioning of the pump or the addition of a pressurized storage tank;

4. Construct a new well to supplement the existing well; or

5. Exercise any other reasonable action acceptable to the well owner and the County.

Nothing in this Consent Decree shall be construed to mean that the County is responsible to the Whitworth Water District or any other water system owner, either public or private, for costs

in excess of those required to provide the above connections. Excess costs include fire flow; storage requirements; and oversizing the system to provide service to non-effected properties.

Nothing in this Consent Decree will prohibit the County from negotiating a written release with the property owner regarding any claims of inverse condemnation and/or diminished property value due to adverse impact on yield or as a result of the existence of contamination at levels exceeding the Table I-1 Performance Standards.

INSTITUTIONAL CONTROLS

The County shall, to the degree authorized by law, implement institutional controls to prevent human access to the Colbert Landfill until such time as the local jurisdictional health department considers such access to be acceptable. The state may implement institutional controls to prevent installation of purveyor wells in areas and at depths known to be contaminated, where such newly installed wells are likely to cause the spread of contamination, or where such wells are likely to impede Remedial Activities.

X

PERFORMANCE CRITERIA

In accordance with the ROD, ground water extraction will continue until all wells in contaminated zones show that the ground water consistently meets health protection levels. Health protection levels will be those Performance Standards identified in Table I-1 of this Scope of Work. The County will notify the Government Plaintiffs that they have met the Performance Standards prior to ceasing ground water extraction, pumping, and treatment from the interception systems. The County's notification to discontinue pumping and treatment shall include a demonstration, based on the monitoring results described below, that the Performance Standards in Table I-1 shall be met on a permanent basis. Because the east system is intended for source control, the continued operation of this system will be at the County's discretion.

Monitoring wells installed during Phase I that are not part of an interception system monitoring program may be included in this demonstration. If included, Phase I - West and East monitoring wells will be assigned to the west interception system, and Phase I - South monitoring wells will be assigned to the south interception system. At some time in the future, additional monitoring wells may be installed upgradient of the interception system(s) to help assess completion of Remedial Action. If additional upgradient wells are required, the number, location and design of these wells will be mutually determined at the appropriate time by the Government Plaintiffs and County.

Operation and maintenance of each extraction/treatment and discharge system will continue until the ground water at each monitoring well assigned to that system (as defined in Section V and supplemented in the previous paragraph) meets the Performance Standards for four consecutive quarterly samplings. If four consecutive quarterly samplings of these monitoring wells all show the ground water to meet the Performance Standards at each assigned monitoring well, the County may, at its discretion, place that interception system on standby status. Standby extraction wells will become monitoring wells. Quarterly sampling and analysis of these monitoring wells will continue for a period of three years. If, during these three years of monitoring, the ground water at each monitoring well continues to meet the Performance Standards, the County may, at its discretion, deactivate the associated extraction and treatment system. In the event that an exceedance of the Performance Standards occurs, a follow-up sample will be collected. An exceedance will be confirmed if chemical constituent levels exceeding the Performance Standards are identified in three consecutive samples collected at two-week intervals. If a confirmed exceedance occurs, the appropriate portion of the associated interception and treatment system will be placed in operation until such time as the standby status criteria is achieved again.

After termination of standby status for each interception system, the County will continue to monitor all accessible supply wells, which have previously exhibited confirmed contamination at levels exceeding the Performance Standards, once per year for an additional five years. All monitoring, and all other obligations of the County under this Consent Decree, will cease when the ground water in all monitoring wells consistently meets the Performance Standards for this final five-year period.

If trends in ground water monitoring data indicate that the length of time required to meet the Performance Standards will be significantly longer than that reported in the RI/FS, the County may petition the Government Plaintiffs for less stringent Performance Standards.

XI

SCHEDULE

A schedule for submission of detailed work plans and additional documentation shall be submitted by the County no later than two (2) months from entry of the Consent Decree. Upon the Government Plaintiffs' approval, the schedule shall be submitted to the Court and become a part of the Consent Decree. The schedule shall identify specifically when work plans for Phase I, the Health and Safety Plan, the Quality Assurance Project Plan, the Phase I Engineering Report, and Phase I progress reports shall be delivered. It shall also describe the basis for establishing a schedule for the Phase II work plans, Landfill Closure Plan, Alternative Water Supply Plan, Plan for Institutional Controls, Phase II Plans and Specifications, Phase II Construction Documentation Report, and Phase II progress reports.

Specifically, the schedule shall address the following work plans:

- Health and Safety Plan;
- Quality Assurance Project Plan;
- Phase I Pilot Well Plan;
- Phase I Ground Water Monitoring Plan;
- Phase I Treatment and Discharge Plan;
- Phase II Extraction Well Plan;
- Phase II Ground Water Monitoring Plan;
- Phase II Treatment and Discharge Plan;
- Landfill Closure Plan;
- Alternative Water Supply Plan; and
- Plan for Institutional Controls;

and the following additional documentation:

- Phase I Engineering Report;
- Phase II Plans and Specifications;
- Phase I and Phase II Progress Reports; and
- Phase II Construction Documentation Report.

APPENDIX "C"

COLBERT LANDFILL TRUST FUND

THIS DECLARATION OF TRUST, dated this _____ day of _____, 1988, is made and entered into by and among SPOKANE COUNTY ("Settlor"), and WASHINGTON TRUST BANK ("Trustee"), pursuant to the Agreements on Consent to Implement Focused Corrective Action Measures pursuant to State of Washington, Department of Ecology, and United States Environmental Protection Agency v. Key Tronic, Inc., and Spokane County, No. _____ and State of Washington, Department of Ecology v. United States Air Force, No. _____ (the "Consent Agreements").

WITNESSETH:

WHEREAS, UNITED STATES AIR FORCE has agreed to transfer, assign, and convey unto the Trustee the sum of One Million Four Hundred Fifty Thousand Dollars ($1,450,000.00) in trust, pursuant to the terms of this Agreement; and

WHEREAS, KEY TRONIC, INC., a Washington corporation, has agreed to transfer, assign, and convey unto the Trustee the sum of Four Million Two Hundred Thousand Dollars ($4,200,000.00) in trust, pursuant to the terms of the Consent Agreements; and

WHEREAS, funds transferred by UNITED STATES AIR FORCE and KEY TRONIC, INC., a Washington corporation, shall constitute the initial corpus of the trust hereby created and shall be held, invested, and distributed pursuant to the terms of this Agreement, it is therefore agreed as follows:

I. Trust Estate. The Trust Estate, as that term is used in this trust, shall consist of the following:

1. The assets transferred to the Trustee by UNITED STATES FORCE and KEY TRONIC, INC., a Washington corporation, as hereinabove provided; and

2. Any funds transferred to the Trustee by any other person or entity, and

3. The proceeds, investments, and reinvestments of the assets so transferred to the Trustee.

II. Trust Purpose. The Trustee shall hold, invest, reinvest, and distribute the Trust Estate, as Trustee, in accordance with the terms and conditions set forth herein. This trust is organized and shall be operated to provide a source of funds for the purpose of paying for the remedial action referenced in the Consent Agreements. In furtherance of this purpose, the Director of the Department of Ecology, hereinafter referred to as the "Director" has sole power to direct the Trustee and the distribution of the Trust Estate in the manner hereinafter provided for.

III. Distributions. The Trust Estate shall be distributed by the Trustee from time to time as directed by the Director pursuant to the Consent Agreements. The Trustee may rely with acquittance upon any direction of payment made pursuant to the Consent Agreements.

IV. Duration. This trust shall continue until the earlier of the issuance of a Certificate of Completion to SPOKANE COUNTY pursuant to the provisions of Section XXX of the Consent Agreements, or until the Trust Estate has been distributed for the activities and purposes set forth herein. If the Trust Estate has not been wholly distributed prior to the earliest date referred to in the first sentence of this paragraph, and there has not been a direction to distribute funds pursuant to Consent Agreements which will exhaust the funds, then all such remaining unappointed funds shall be delivered forthwith one-half (1/2) to the State of Washington, Department of Ecology, and one-half (1/2) to the United States Environmental Protection Agency.

V. Irrevocable Nature of Trust. The trust created by this Agreement shall be deemed irrevocable and the Settlor shall have no right whatsoever to alter, amend, revoke, or terminate this Trust Agreement in whole or in part. Further, it is the intention of KEY TRONIC, INC., a Washington corporation, and UNITED STATES AIR FORCE to transfer all of their interest in the Trust Estate transferred to the Trustee herein. Therefore, UNITED STATES AIR FORCE and KEY TRONIC, INC., a Washington corporation, and any other person or entity transferring assets to the Trustee hereunder, do hereby assign to the Trustee all right, title, and interest in and to the

Trust Estate and relinquish all administrative power over the Trust Estate or any power to control the beneficial enjoyment of the trust assets.

VI. Trustee. It is hereby directed to invest and reinvest the trust assets and such property as it from time to time deems prudent. Provided, however, that the Trustee's power to invest the trust assets shall be limited in the same manner as the ability of persons investing funds on behalf of municipalities within the State of Washington is limited pursuant to RCW 36.29.020 et seq.

VII. Powers and Duties of Trustee. Except as specifically restricted hereunder, the Trustee shall have all duties, powers, and rights imposed and granted by the laws of the State of Washington.

In addition to the duties, powers, and rights imposed and granted by law, the Trustee shall have (unless specifically restricted herein) the power and the exercise of discretion in the application thereof to:

1. Determine the allocation of receipts and expenses between income and principal in accordance with the Washington Principal and Income Act;

2. Rely with acquittance upon the advice of counsel on questions of law;

3. Merge or combine any trusts hereunder with the trust or trusts otherwise established for the same purpose and substantially the same provisions, and thereafter administer and distribute such combined estate as one;

4. Appoint an ancillary trustee or agent to facilitate the management of assets located in another state, if any;

5. At any time to resign as Trustee of the trust created by this instrument without court proceeding, by delivering written notice of resignation as hereinafter provided;

6. To commence or defend at the expense of the trust such litigation with respect to the trust or any property of the trust as the Trustee may deem advisable;

7. Compromise, submit to arbitration, release with or without consideration, and otherwise adjust any claims in favor of or against the trust.

VIII. Resignation. The Trustee shall have the right to resign at any time by delivering its resignation in writing to the Settlor, such resignation to take effect upon the acceptance of appointment in writing by successor Trustee. Upon any such resignation, the Settlor shall deliver to the Director a copy of the Letter of Resignation, together with a letter proposing to appoint a successor Trustee. Provided, however, any successor Trustee shall be a corporation authorized to conduct trust business within the State of Washington and at the time of its appointment have assets of not less than One Hundred Million Dollars ($100,000,000.00) of trust funds.

Upon the approval of successor Trustee by the Director, the Settlor shall in writing appoint a successor Trustee. Acceptance of appointment of successor Trustee shall be in writing and shall become effective upon receipt by the Settlor of the notice of such acceptance.

Any successor Trustee appointed under this article shall, upon appointment, immediately succeed to all powers, rights, discretions, obligations, and immunities of the Trustee under this Agreement with the same effect as though successor Trustee were originally named as Trustee in this Agreement.

IX. Compensation. The Trustee shall be entitled to be paid reasonable compensation as agreed upon by the Settlor and the Trustee.

X. Governing Law. This Trust Agreement shall be administered, construed, and enforced according to the laws of the State of Washington. Should any provision of this Agreement be or become invalid or unenforceable, the remaining provisions of this Agreement shall be and continue to be fully effective.

XI. Notices. Any notices or other communication required or permitted by this Agreement to be delivered to or served on the Trustee shall be deemed properly delivered to, or serve on, and received by the Trustee when personally delivered to a trust

officer of the Trustee, or in lieu of such personal service, when deposited in the United States mail, certified mail with postage prepaid, addressed to the trustee at West 717 Sprague Avenue, Spokane, Washington 99204 (Attention Trust Department).

Any notices or other communications required or permitted by this Agreement to be delivered to or served on the Department of Ecology shall be deemed properly delivered to, or served on, and received by the Department of Ecology when deposited in the United States mail, certified mail with postage prepaid, addressed to the Director, Department of Ecology, Mailstop PV-11, Olympia, Washington 98504, or its designate.

Executed on the ____ day of _____, 1988, at Spokane, County, Washington.

SPOKANE COUNTY

By _____
Its Chairman

"Settlor"

WASHINGTON TRUST BANK

By _____
Its _____

"Trustee"

APPENDIX "D"

REQUEST FOR FUNDING PREAUTHORIZATION FOR THE HAZARDOUS SUBSTANCE RESPONSE TRUST FUND BY SPOKANE COUNTY FOR THE COLBERT LANDFILL REMEDIAL ACTION

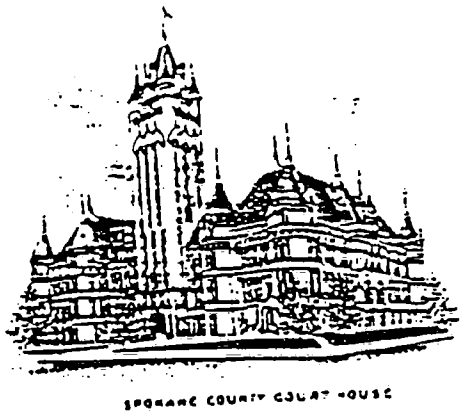
Prepared for

Environmental Protection Agency

Prepared by

Spokane County

September 12, 1988



SPOKANE COUNTY COURT HOUSE

SPOKANE COUNTY

OFFICE OF

PUBLIC WORKS DEPARTMENT

DENNIS M. SCOTT, P.E.
DIRECTOR OF PUBLIC WORKS

(509) 456-3600
NORTH 811 JEFFERSON STREET
SPOKANE, WASHINGTON 99260-0180

September 9, 1988

Office of Emergency and Remedial Response
MIS: WH-548
U.S. Environmental Protection Agency
401 "M" Street S.W.
Washington, D.C. 20460

Attention: Mr. Henry L. Longest, II, Director

RE: Colbert Landfill
Request for Preauthorization

Gentlemen:

Spokane County is filing this request for preauthorization for cost recovery related to the Colbert Landfill remedial action in Spokane County, Washington. The County would like to thank Mr. Bill Ross of your Washington, D.C., office for his guidance during preparation of this request.

Spokane County's request for preauthorization (for mixed funding) is for $1,400,000, or approximately 10 percent of the estimated cost of remediation for the Colbert Landfill Superfund site. To date, a Consent Decree (Appendix B) has been agreed to in principle. This draft Consent Decree includes a Scope of Work (Appendix C), which provides a detailed framework for implementation of the remedial action based on the EPA-selected remedy (as described in the Record of Decision [Appendix A]). The Consent Decree will be lodged following approval of Spokane County's request for preauthorization.

Spokane County intends to implement the Colbert Landfill remedial action using a design consultant and a contractor for project design and construction, respectively. As documented herein, the consultant and contractor selection process will be free and open, and will be structured such that the selected firms will have the capability, knowledge and understanding to successfully complete the remedial action. Spokane County has managed a number of large construction

projects, including some larger than the Colbert Landfill remediation, and intends on utilizing this management expertise during implementation of the remedial action.

We trust that you will find this request for preauthorization complete. However, please advise us if you have any additional information requirements.

Very truly yours,

Dennis M. Scott, P.E.
Director of Public Works

DMS:sla/0203o
Attachments

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LIST OF TABLES

REQUEST FOR FUNDING PREAUTHORIZATION FOR THE HAZARDOUS SUBSTANCE RESPONSE TRUST FUND BY SPOKANE COUNTY FOR THE COLBERT LANDFILL REMEDIAL ACTION

Section 111(a)(2) and 122(a) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), authorizes the Hazardous Substance Response Trust Fund (Fund) to reimburse potentially responsible parties (PRPs) for costs incurred as a result of carrying out the National Contingency Plan (NCP). In order to qualify for reimbursement, the requesting party must seek and obtain prior approval (preauthorization) from the Environmental Protection Agency (EPA) administrator for the proposed remedial action. Spokane County is a PRP eligible under Section 111(a)(2) of the CERCLA, 42 U.S.C. 9611(a)(2), for reimbursement of "necessary response costs incurred...as a result of carrying out the National Contingency Plan." To fulfill the requirements for reimbursement, Spokane County is filing this request for preauthorization for cost recovery from the Fund related to the Colbert Landfill remediation. This request is for $1,400,000, which represents approximately 10 percent of estimated design, construction, and startup costs for this action. This amount has been mutually agreed upon between EPA and Spokane County, and is intended to cover the remediation costs of the non-settling PRPs.

INTRODUCTION AND SITE DESCRIPTION

The Colbert Landfill is an inactive sanitary landfill located in northeastern Washington approximately 15 miles north-northeast of the City of Spokane. Situated in the southeast corner of

Section 3, Township 27 North, Range 43 East, W.M., the landfill covers 40 acres. It is about two and one-half miles north of the Town of Colbert and one-half mile east of U.S. Highway 2 (Newport Highway) in the northwestern quadrant of the intersection of Elk-Chattaroy, Yale, and Big Meadows Roads. Owned and operated by Spokane County (The County), the Colbert Landfill opened in 1968 and received both municipal and commercial wastes until 1986. The landfill is now filled to capacity and is no longer receiving wastes.

The remedial action site, the area of potential impact surrounding and including the landfill, extends north of the landfill about one-half mile, west about one mile to the Little Spokane River, east a similar distance, and south approximately five miles to Peone Creek (also known as Deadman Creek). The total remedial action area is approximately 6800 acres and includes parts of Sections 2, 3, 10, 11, 14, 15, 16, 21, 22, 23, 26, 27, 28, 33, 34,and 35 in T 27 N, R 43 E. The site is located on a plateau bounded by steep bluffs on the west and low granite and basalt hills to the east. Surface drainage is west to the Little Spokane River. The climate is characteristic of eastern Washington, with temperatures ranging from typical average summer highs of about 83^{o} F to average winter lows of around 23^{o} F. The relatively low annual precipitation of approximately 17 inches falls mainly during the winter months of November through February (NOAA 1985).

The geology of the site consists of a series of glacially-derived materials deposited on an eroded landscape of clays, basaltic lava flows, and granitic bedrock. The stratigraphic

units (layers) as described in the Remedial Investigation (RI) (Golder Associates, Inc., 1987), from youngest to oldest (i.e., from the top down), are:

Unit A. Glacial outwash/Missoula flood sands/gravels;

Unit B. Glacial Lake Columbia lacustrine silts/clays;

Unit C. Older glaciofluvial and/or alluvial sands/gravels;

Unit D. Weathered basalts and Latah (landslide deposits);

Unit E. Unweathered Latah silts/clays;

Unit F. Granite bedrock.

This specific geologic system can be hydrogeologically defined as containing three aquifers and three aquitards. There is an aquifer associated with Unit A, the glacial outwash/ Missoula flood deposits, which is designated as the upper sand/ gravel aquifer. Unit B, the lacustrine silts/clays stratum, is a relatively impermeable layer which acts as an aquitard. The second aquifer, located in Unit C, the older glaciofluvial and/or alluvial deposits, is called the lower sand/gravel aquifer. The weathered zone of the basalts and Latah, Unit D, may be considered an extension of the lower aquifer. The unweathered Latah silts/clays, Unit E, serves as the second aquitard. The upper fractured zone of the granite, Unit F, is capable of water transmission and, although a poor producer in most areas, it could be considered as an aquifer while the deeper, less fractured portions of the bedrock serve as the confining lower boundary or aquitard to the entire regional flow system.

The upper aquifer is unconfined with a water table at an approximate elevation of 1,770 feet (MSL), 90 feet below ground

surface in the area of the landfill. The thickness of the upper aquifer varies from about 8 to 15 feet along its north-south trending centerline, decreasing as it extends toward the western bluffs and eastern hills. Ground water flows predominately toward the south with velocities ranging from 4 to 13 feet per day (ft/day). The lower aquifer is generally a confined system, with its potentiometric surface at an approximate elevation of 1,680 feet (MSL), 180 feet below ground surface in the area of the landfill. The thickness of the lower aquifer varies considerably from only a few feet thick east of the landfill, to over 150 feet thick as it approaches the Little Spokane River valley where the aquifer is hydraulically connected with the river. Ground water in this lower sand/gravel aquifer flows predominantly toward the west at velocities ranging from 2 to 12 ft/day. Northeast of the landfill, the upper aquitard is not present and the lower aquifer is closer to the surface, interconnecting with the upper aquifer.

The Colbert Landfill was operated as a sanitary landfill by the Spokane County Utilities Department. It was opened in September 1968 and operations ceased in October 1986. During the five years from 1975 to 1980, a local electronics manufacturing company, Key Tronic Corporation (Key Tronic), used the Colbert Landfill to dispose of spent organic solvents, mainly methylene chloride (MC) and 1,1,1-trichloroethane (TCA), at an average rate of several hundred gallons a month (See Appendix A: ROD, Table 1, for approximate disposal volumes). These wastes were typically brought to the landfill in drums which were

emptied into open trenches to mix with the soil or municipal refuse already in the trench. A nearby military facility, Fairchild Air Force Base, also disposed of various solvent wastes at the site. Hazardous substances detected in the ground water at the site were also disposed of by a number of other parties, including Alumax Irrigation Products, A&M Manufacturing, and United Paint, Inc. A variety of other chemicals (such as pesticides and refinery tar residues) from other sources were also disposed at the site but have not, to date, been detected in the ground water at the site.

In 1980, nearby residents complained to the Eastern Regional office of the Washington Department of Ecology (Ecology) about disposal practices at the landfill. State and county officials, under the lead of the Spokane County Utilities Department, initiated an investigation into complaints of ground water contamination in the area by sampling nearby private wells. The results of this initial investigation indicated that some of these wells were contaminated with TCA.

Since 1980, additional studies have been directed toward the contamination problem at the Colbert Landfill. The first study (Maddox 1981), initiated in response to citizen complaints, included a review of existing information on the site and some field study, and recommended a ground water monitoring program. Further studies, conducted in 1982 (Maddox 1982), involved monitoring well installation, injection tests, and two rounds of ground water quality sampling and analysis. This study included sampling of selected private and purveyor wells.

In August 1983, the EPA placed the Colbert Landfill site on its National Priorities List (NPL). CH2M Hill was then contracted by EPA to develop a Remedial Action Master Plan (CH2M Hill 1983). This plan presented a scope of work for the eventual Remedial Investigation/Feasibility Study (RI/FS). During this period, the County and Key Tronic continued sampling and analysis of well waters around the landfill (Spokane County and Key Tronic 1986).

Beginning in 1984, bottled water supplies were distributed by the County and Key Tronic to those households with high contamination levels in their wells. Ecology entered into a cooperative agreement with the EPA for conducting a RI/FS at the Colbert Landfill site in August 1984. A "Focused Feasibility Study for Initial Remedial Measures at the Colbert Landfill" (Ecology 1984a) was conducted and a "Community Relations Plan for Remedial Measures at the Colbert Landfill" (Ecology 1984b) was initiated in June 1984. The chosen Initial Remedial Measure (IRM) was to supply water to the affected area by constructing a pressurized water system through the Colbert Extension (System 9) of the Whitworth Water District No. 2. Hook-up of affected residents to this system was subsidized by two of the PRPs (the County and Key Tronic), contingent on three conditions:

- Well water contamination of more than 200 micrograms per liter TCA;
- Proximity (less than 500 feet) to water supply mains; and
- Execution of a hold-harmless agreement.

Other residents not meeting these conditions have also elected to receive this water at their own expense.

Ecology contracted Golder Associates, Inc. (Golder) to conduct a data review of the Colbert Landfill site. A recommendation report was submitted in December 1984 (Golder Associates, Inc.1984), and a work plan for the Remedial Investigation (RI) was submitted in January 1985. Authorization to conduct the RI was received in March 1985. A draft RI report was released for public review in May 1986 and the final RI report was completed in May 1987 (Golder Associates, Inc. 1987).

The primary contaminants detected in the ground water at the Colbert Landfill site during the RI were six volatile organic chemicals, all chlorinated aliphatic hydrocarbons (Golder Associates, Inc. 1987). These contaminants are listed in Table 1. Several other contaminants were also detected in the RI samples, but occurred at lower concentrations or were less widely distributed (see Table 1). Because they behaved similarly to the primary contaminants, they were not considered separately for remediation. Although the contaminants placed into the landfill traversed a considerable thickness of unsaturated soil to reach the ground water, only trace concentrations of these chemicals were found in soil samples obtained from the landfill during the RI drilling program.

In April 1986, Ecology authorized Golder to prepare a feasibility study (FS) based upon the RI. The FS was performed by Golder and a subcontractor, Envirosphere Company, with input from Hall and Associates. The FS Final Report was submitted for public comment in May 1987 (Golder and Envirosphere 1987).

TABLE 1

ORGANIC CONTAMINANTS FOUND IN COLBERT LANDFILL SITE GROUND WATER DURING REMEDIAL INVESTIGATION

Contaminant	Number of Wells	Maximum Concentration (ug/l)*
Major Contaminants		
1,1,1-Trichloroethane (TCA)	20	5,600
1,1-Dichloroethylene (DCE)	19	190
1,1-Dichloroethane (DCA)	19	600
Trichloroethylene (TCE)	11	230
Tetrachloroethylene (PCE)	9	23
Methylene Chloride (MC) (also called Dichloromethane)	11	2,500
Lesser Contaminants		
Acetone (also called Propanone)	3	445
Chloroform (also called Trichloro-methane)	11	6
Methyl Ethyl Ketone (also called 2-Butanone)	2	14
1,2-Dichloroethane (also called Ethylene Dichloride)	2	5
1,2-trans-Dichloroethylene	5	12
Toluene (also called Methyl Benzene)	2	<1

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* In this report, all organic contaminant concentrations will be presented in units of micrograms (ug) of chemical per liter (l) of water. This conventional unit of measurement is essentially equivalent to parts per billion (ppb).

Prior to design and construction of the final remedial action, additional site characterization will be required (termed Phase I in the Draft Consent Decree Scope of Work [Landau Associates, Inc. 1988]). Consequently, it will not be possible to describe in detail some aspects of the remedial action requested in the preauthorization guidance document (EPA 1988). However, the Draft Consent Decree Scope of Work (Scope of Work) provides a detailed framework for the remedial action and documents the review and approval authority of the EPA for aspects of remedial action not addressed within the RI/FS or the ROD. The ROD and the Scope of Work are included as Appendices A and C, respectively. Due to its size, a copy of the RI/FS is not included.

The County intends to implement the remedial action utilizing a design consultant and a contractor for design and construction, respectively; but will provide project management services internally. As will be described in greater detail in subsequent sections of this text, the design consultant and the contractor will be chosen using (separate) selection processes that provide maximum open and free competition; and that insure the selected party has the capability, knowledge, and understanding to fulfill their respective roles in completing the remedial action.

One of the primary functions of the County is to provide services, such as roadways and sewers. As such, the County has demonstrated the ability on numerous occasions to manage large construction projects, including some projects costing more than that estimated for the Colbert Landfill remediation. However, since these projects have not been related to contamination

remediation, the selected design consultant will be required to have a demonstrated knowledge and understanding of CERCLA, and will be expected to facilitate remedial activities in accordance with CERCLA requirements.

CONSENT DECREE AND NATURE OF SETTLEMENT

An EPA PRP study resulted in notice letters being sent to 12 parties. Four of these parties were ultimately identified as PRPs. These include: the County, Key Tronic, the United States Department of Defense (the Air Force), and Alumax. A consent decree has been agreed to in principle between the Governments (EPA and Ecology), the County, and Key Tronic in July 1988. The Air Force has also settled with the Governments, the terms of which are embodied within a separate Consent Decree. Alumax has not agreed to execute the Consent Decree.

Key Tronic and the County have proposed a settlement in which the County will perform the remedy selected by EPA, as specified in the Scope of Work, and Key Tronic will pay the amount of $4,200,000 into a trust fund for remediation of the Colbert Landfill site (Trust Fund). Key Tronic's payments will be made under the schedule contained in Section VIII of the Consent Decree. The Air Force has agreed to pay $1,450,000 toward the remedial action. The County will contribute the remainder of the monies required to accomplish the remedial action (including EPA mixed funding, and State mixed funding and grants specified within the scope of work).

EPA has indicated an intent to cost-recover against non-settling PRPs if they (the PRPs) do not ultimately execute the Draft Colbert Landfill Consent Decree (Consent Decree).

Ecology has agreed to assist the County by contributing $660,000, which includes previously incurred Ecology expenses and claims against the Washington State Toxics Control Account under Chapter 70.105B (Washington Administrative Code). The County will also be eligible to apply for and may receive an unspecified amount of future State grant monies and State mixed funding.

The Consent Decree specifies that the remedy will be implemented by the County.

In accordance with the Consent Decree, the County seeks reimbursement for $1,400,000 from the Fund. The various funding sources for remediation of the Colbert Landfill site are presented in Table 2.

TABLE 2

FUNDING SOURCES FOR REMEDIATION
OF THE COLBERT LANDFILL SITE

Source	Amount
Key Tronic	$4,200,000
U.S. Air Force	1,450,000
State of Washington	660,000
E.P.A.	1,400,000
Spokane County	6,290,000*

* Based on an estimated total remediation cost of $14,000,000

The consent decree (attached hereto as Appendix B) will be lodged with the United States District Court, District of Eastern

Washington. After the Consent Decree has been approved and entered by the Court, the County will be obligated to carry out its terms and to implement the remedy selected by EPA in its Record of Decision (ROD; EPA 1987) and specified in the Scope of Work. Moreover, the County fully intends to undertake and complete the clean-up of this site in a timely manner.

REMEDY

Background

Spokane County proposes to implement a performance-based pump, treat, and discharge approach for remediation of contaminated ground water emanating from the Colbert Landfill site. This is the remedy selected by the EPA in the ROD and specified in the Scope of Work. As discussed in the ROD, a number of treatment options are acceptable, provided the selected option meets an EPA approved performance criteria, as specified in the Scope of Work. Spokane County is proposing to implement the EPA-selected option, using air stripping for treatment. The pump and treat remedy is designed to:

- prevent further spread of contaminated ground water (in the south and west) in two aquifers by installing and operating interception wells;
- remove contaminated materials (in the east) which have entered the aquifers and are contributing to the contamination plume, by installing and operating extraction wells in the area where the plumes originate;

- reduce the toxicity, mobility, and volume of the contaminants by treating all extracted ground water from both interception and extraction wells; and
- provide an alternate water supply system to any residents deprived of their domestic supply due to demonstrated contamination from the landfill or due to the action of the extraction or interception systems.

The selected remedy is based on the RI/FS, which examined several remedial options including:

- no action;
- alternate water supply;
- point of entry treatment; and
- ground water extraction, treatment, and discharge (using various technologies for each), plus an expanded water system.

Each of these alternatives was considered separately in three geographic portions of the site:

- the south area, where a contaminant plume is advancing to the south in the upper aquifer;
- the west area, where a contaminant plume in the lower aquifer is the major concern; and
- the east area, where the plumes appear to originate.

About 90 different technologies were screened and evaluated during the feasibility study. As a result of this analysis, 26 remedial alternatives were carried through a detailed evaluation using the EPA's 1985 RI/FS factors (EPA 1985): 12 for the south area, and 7 each for the west and east areas.

Selected Remedy

The remedy selected by the EPA in the ROD, as specified in the Scope of Work, includes the following components:

- in the south area, a series of extraction wells will be installed at the southern (downgradient) edge of the contaminant plume to intercept the contaminant plume in the upper aquifer;
- in the west area, a series of extraction wells will be installed to minimize future westward migration of contamination in the lower aquifer; and
- in the east area, where the plume originates, extraction wells will be installed for contaminant source control in the lower aquifer.

Contaminated ground water will be extracted using deep wells. All three systems will be designed to treat extracted water to the Scope of Work specified performance standards employing air stripping as the method of treatment. Options for disposal of treated water include discharge to the Little Spokane River (all systems), subsurface recharge (south and east systems), and discharge to Deep Creek (south system). Each of the extraction systems will include a comprehensive ground water monitoring program designed to evaluate system effectiveness. The extraction, treatment, discharge, and monitoring programs are described in detail in the Scope of Work. Additional related remedial action components, also specified in the Scope of Work, include:

- closure of the Colbert Landfill;
- comprehensive ground water supply well monitoring program and alternate water supply plan; and
- institutional controls on the future use of ground water in the area.

The remedial action will be implemented in phases. Phase I is designed to better characterize contaminant distribution and site geohydrology. Following completion of the Phase I investigation, design of the (Phase II) remedial action will be accomplished. The ROD provides for a performance-based design, allowing flexibility in the remedial approach. Specific performance criteria were presented in the ROD (Table 1 Performance Standards) and have been further refined in the Scope of Work (Tables IV-1 and V-1). The Scope of Work specifies the bases for design, the design criteria, and criteria for adjustment and modification of the remedial action if the design criteria are exceeded during operation. Thus, the Scope of Work specifies the bases for remedial action design.

Applicable and Relevant Standards

The EPA has evaluated the pump, treat, and discharge remedial approach and determined that it adequately protects human health and the environment and complies with applicable or relevant and appropriate public health or environmental requirements (ARARs). As specified in the ROD, the laws and regulations of concern include:

- Resource Conservation and Recovery Act (RCRA, 42 USC 6901); RCRA regulations (40 CFR 261 to 280); Washington State

Dangerous Waste Regulations (WAC 173-303); Minimum Functional Standards for Solid Waste Handling (WAC 173-304).

The selected remedy prevents further spread of ground water contamination and constitutes a Corrective Action program as specified in 40 CFR 264.100 and WAC 173-303-645(11). Closure of Colbert Landfill to State Minimum Functional Standards will be evaluated to ensure consistency with RCRA landfill closure standards.

- Safe Drinking Water Act (SDWA, 42 USC 300); Primary Drinking Water Standards (40 CFR 141).

The selected remedy prevents exposing the public to drinking water which exceeds the Maximum Concentrations Levels.

- Clean Water Act (CWA, 33 USC 1251); National Pollution Discharge Elimination System (NPDES, 40 CFR 122); NPDES Permit Program (WAC 173-220).

The selected remedy treats the extracted water before discharge to surface water. Other, mainly procedural, aspects of the NPDES Permit system will be met during the design phase. Although not actually required, it is the intent of Ecology to issue a permit.

- Rules and Regulations of the State Board of Health Regarding Public Water Systems (WAC 248-54).

Enhancements to the alternate water supply system, in order to supply all residences that may require these supplies, as

specified in the Scope of Work will be in conformance with these regulations.

Since the remedial action will implement a ROD selected remedy and a public comment period was required as part of the ROD process, the requirement for adequate notice and opportunity for public comment on the proposed remedy has been fulfilled.

DEVELOPMENT OF THE DESIGN PACKAGE

Consultant Selection

A consultant will be responsible for developing the remedial action pilot study and design for the project. Selection of the consultant will be based on the demonstrated competence and qualifications of prospective consultants to perform the required services at a fair and reasonable price. The process of consultant selection was initiated on February 8, 1988, when Spokane County advertised a Request for Professional Qualifications (RFQ). In response, nine firms submitted a Statement of Professional Qualifications (SOQ). The SOQ's were evaluated and a short-list of the five best qualified firms was identified based on the following criteria:

- History of firm
- Project considerations
- Past experience on similar projects
- Expertise of project team
- Project management approach and philosophy
- Community relations experience

The next step in the selection process will be to issue a Request for Proposal (RFP) to the short-listed firms, which will be accomplished following lodging of the Consent Decree. The criteria for final selection of the design consultant are still under development. However, appropriate criteria will be selected to ensure that the retained firm has the capability, knowledge, and understanding of the project required to successfully fulfill their obligations as design consultant.

A copy of the ROD, Draft Consent Decree, and Scope of Work will be provided to each short-listed firm for use during proposal preparation. Proposals will be evaluated and the most qualified firms will be ranked in order of qualification. This process typically requires 60 to 90 days. As a "Local Agency", the County must meet Washington State Regulations for Contracts for Architectural and Engineering Services, as set forth in the Revised Code of Washington (RCW 39.80). A copy of these regulations is included in Appendix D. The consultant selection criteria will also meet federal procurement guidelines (40 CFR Part 33), in particular Section 33.525 (optional selection procedure for negotiation and award of subagreements for architectural and engineering services). Upon selection of the most highly qualified firm, the County will attempt to negotiate a design contract with that firm. If the County is unable to negotiate a fair and reasonable price with the most highly qualified firm, it will begin negotiations with the next qualified firm. Once a contract is negotiated and executed, implementation of the Scope of Work will begin.

Design Elements

Phase I, which is intended to better characterize contaminant distribution and site geohydrology for the Phase II interception system design, will be developed on the RI/FS and the ROD, as specified in the Scope of Work. Components of the Phase I design, as specified in the Scope of Work, for each project area include:

- South System: Installation of a pilot ground water extraction and treatment system; installation of a ground water monitoring system to identify the location of the contaminant plume and assess the performance of the pilot system; assessment of treated water discharge management options; and definition of the Phase II - South ground water interception and treatment system;
- West System: Installation of a pilot ground water extraction and treatment system; installation of a ground water monitoring system to identify vertical and horizontal hydraulic gradients, determine the current location and distribution of the contaminant plume, and assess the performance of the pilot extraction system; assessment of treated water discharge management options; and definition of a Phase II - West ground water interception and treatment system; and
- East System: Installation of two pilot ground water extraction wells and a common treatment system; installation of a ground water monitoring system to improve definition of the location of the contaminant plume and assess the performance

of the pilot systems; assessment of treated water discharge management options; and definition of the Phase II - East ground water extraction and treatment system.

As specified in the Scope of Work, all work accomplished during Phase I will be performed in accordance with work plans subject to the review and approval of the EPA. The following Phase I work plans will be provided:

- Health and Safety Plan;
- Quality Assurance Project Plan;
- Phase I Pilot Well Plan;
- Phase I Ground Water Monitoring Plan; and
- Phase I Treatment and Discharge Plan.

Phase I progress reports will be submitted for EPA review, either monthly or at the completion of major project milestones. The activities accomplished during Phase I, conclusions resulting from these Phase I activities, and an assessment of the impact of these conclusions on the selected remedial action will be presented for EPA review in the Phase I Engineering Report.

Following completion of the Phase I investigation, design of the remedial action (Phase II) will be accomplished. In the Phase II design, the consultant will develop the final design for the extraction, treatment, discharge, and monitoring systems for the south, west, and east project areas.

Preliminary remedial action design will be accomplished as part of the Phase II work plan preparation for the various remedial action components. Phase II Work Plans will include:

- Phase II Extraction Well Plan;
- Phase II Ground Water Monitoring Plan; and
- Phase II Treatment and Discharge Plan.

Peripherally related work plans that may be submitted at the same time as the Phase II work plans include:

- Landfill Closure Plan;
- Alternative Water Supply Plan; and
- Plan for Institutional Controls.

The County understands that some work plan components may require more EPA review than others if significant design modifications are to be avoided. Consequently, some key components will be submitted for EPA review early on in the design process. Following Government review of the work plans, Phase II Plans and Specifications will be prepared and submitted for Government review at the 30, 60, and 90 percent completion stages to complete the remedial action design package.

Schedule

Spokane County intends to accomplish the design and construction of the remedial action in a timely manner. As specified in Section XI of the Scope of Work, a schedule for submission of detailed work plans and additional documents will be submitted within two months from entry of the Consent Decree. The schedule will identify specifically when the Phase I work plans, Health and Safety Plan, Quality Assurance Project Plan, Phase I Engineering Report, and Phase I progress reports will be delivered. It will also describe the bases for establishing a

schedule for the Landfill Closure Plan, Alternative Water Supply Plan, Plan for Institutional Controls, and Phase II Progress Reports. The EPA will be kept informed of project activities through the submittal of progress reports and, if necessary, through project meetings with appropriate County representatives.

A final schedule cannot be developed until certain legal aspects (such as entry of the Consent Decree) are completed and additional (Phase I) data are collected and analyzed. However, a preliminary (non-binding) schedule of major milestone events has been prepared for this document and is presented in the Cost Data section of this document in Table 3.

Sufficient data are not available to accurately estimate the length of time to complete the remedial action. Best estimates to date indicate that it could take thirty years or longer to meet the presently established performance criteria.

CONSTRUCTION OF THE REMEDY

The construction of the remedy (Phase II) will consist of three interrelated, and possibly overlapping, ground water extraction, treatment, and discharge systems (south, west, and east). The ground water extraction systems will each consist of several deep wells, serviced by submersible or turbine pumps and connected to the treatment system(s) by a tight-line header assembly. The treatment system(s) will consist of one or more air stripping units set on a concrete slab foundation, with appropriate utility connections for electricity and (possibly) natural gas. The need for stripping tower air abatement will be

assessed as specified in Section V.D of the Scope of Work. Treatment system effluent will be conveyed to the discharge point(s) by pipeline, with appropriate outfall structure(s) constructed to minimize erosion and promote dispersion. To the extent practicable, system components (wells, header assemblies, discharge lines, etc.) will be located below ground to minimize damage from freezing and vandalism, and to mitigate the impact of the remedial action on the local landscape.

These components will be constructed based on the Phase II Plans and Specifications (see Section XI of the Scope of Work), which will be developed from the data generated during the Phase I investigation and pilot studies. Although some of the remedial components (such as the treatment system(s)) could be designed based on available information, the use of Phase I site characterization data and observations of pilot system performance should provide a more efficient, cost-effective design.

A construction quality assurance/quality control (QA/QC) plan will be developed by the design consultant and submitted before construction begins. Methods to assure material quality and proper construction techniques will be developed and incorporated into the construction QA/QC plan. The design consultant will provide construction management, construction inspection, design support, and shop drawing review services during construction. This will ensure adherence to the QA/QC plan. Appropriate performance bonds, as specified in the final bid documents, will be required.

The County intends to use contracting practices that will provide maximum open and free competition and that will not unduly restrict or eliminate competition. Contractor selection for construction of the (Phase II) remedial action will be accomplished in accordance with statutory procedures in awarding contracts (RCW 36.32.250), using standard Spokane County procurement procedures (these statutory requirements are presented in Appendix D). Contractor selection will also be conducted in accordance with federal procurement guidelines (40 CFR, part 33). The invitation for bids will include the selection criteria and will be advertised in the legally-designated newspaper for Spokane County, a locally-circulated newspaper, and a regionally-circulated newspaper. Contractor scope of work and recommended alternatives will be reviewed by the County's design consultant. Contractor bids will be reviewed and verified, and the construction awarded to the lowest responsive responsible bidder. Following completion of all the required legal documents and public notice, a contract will be signed between the County and the Contractor, and construction of the remedial action (Phase II) can be initiated. It is presently anticipated that the contract will be based on a fixed price rather than cost reimbursement.

Construction of the remedial action will be accomplished based on Phase II Work Plans and Phase II Plans and Specifications. A Phase II construction schedule will be developed in conjunction with the schedule for submittal of Phase II deliverables discussed in Section XI of the Scope of Work.

Phase II progress reports will be submitted to EPA for review. These progress reports will be submitted either periodically or at the completion of major Phase II construction milestones.

Following completion of construction, a Phase II Construction Documentation Report will be submitted to the EPA. This report will document Phase II construction activities, including any significant variations from, or modifications to, the Phase II Plans and Specifications or Work Plans.

Phase II construction oversight will be accomplished by the County's design consultant and/or other County representatives. To provide verification of compliance with Phase II Plans and Specifications, oversight will include field monitoring of construction and review of contractor-selected materials and construction methods. A construction manager will be designated by the County to be a focus for oversight activities and to ensure that the intent of the Phase II Plans and Specifications are being followed and the construction schedule is being achieved.

MANAGEMENT AND OPERATION OF THE PROJECT

During remediation, numerous activities involving various different kinds of skilled personnel will be undertaken at the same time. As a result of the complexity of this project, complete and effective project management is essential for proper execution. Thus, a well-defined management structure, as described below, will be established at the beginning of the project.

Project management for the Colbert Landfill remediation will be administered by the County, although many of the technically related management tasks will be accomplished by the design consultant. The County has managed a number of large projects, including a $120,000,000 waste to energy incinerator (presently under design) and $40,000,000 of sewer line construction projects. Thus, the County has a demonstrated knowledge and capability to manage projects of this size.

Spokane County will designate a County employee as Project Coordinator. The Project Coordinator will have overall responsibility for project supervision throughout remediation. The Project Coordinator will be a professional engineer with qualifications necessary for satisfactory performance of the job, including experience in managing large construction projects.

The Project Coordinator's responsibilities will include assessment of overall project progress and coordination; interaction with the EPA project manager, other federal and state regulatory agencies, other interested parties, and local citizen groups on behalf of the County; and the undertaking of any community relation activities that the County agrees to perform at the request of the United States and the State of Washington. The Project Coordinator will be responsible for budget review and direct coordination with the design consultant.

The Project Coordinator will also oversee the activity of several entities responsible for the individual segments of the remedial program, although it is anticipated that a single design consultant firm will be retained to provide management and engineering expertise for the following tasks:

- Phase I Investigation and Pilot Studies;
- Preparation of Work Plans and other Deliverables (see Scope of Work, Section XI); and
- Consulting/Design Services
  - design of extraction, treatment, and discharge systems,
  - monitoring evaluation,
  - construction oversight,
  - facilities start-up,
  - facilities operations and maintenance plans.

A single point of contact will be established within the design consultant firm to facilitate communications with the Project Coordinator. Individual Task Managers will be assigned to handle internal communications and provide technical oversight and quality control.

Contractors will be retained to implement Phase II of the Remedial Action. It may also be necessary to retain contractors for construction of some of the Phase I components and to provide occasional O&M services for the extraction, treatment, and discharge system. However, the County plans on using their own personnel to operate the facilities based on the facilities operations and maintenance plans to be developed by the design consultant.

Because this project is anticipated to generate a large volume of data, a computerized data management system will be established to effectively store and retrieve the necessary information. Data will be provided from all onsite task func-

tions to this system, and the system will be available for all tasks.

The management system will provide cost-effective project direction by minimizing the number of decision makers and streamlining communications. It will assure that the Project Coordinator is able to provide adequate project oversight and serve as a focus for remedial activities, while allowing the design consultant to implement the remedial action in a timely and cost-effective manner.

EPA oversight is to be provided by the designated EPA project manager. The EPA project manager will be kept informed of relevant site activities by the County, or their designated representative. The EPA project manager can use this information to determine the appropriate level of EPA oversight required for various site activities.

COST DATA

Because it is ultimately responsible for between 30 to 50 percent of the total estimated costs, Spokane County has a strong incentive to conduct the remedy at this site in a cost-effective and efficient manner. Thus, the County intends to monitor closely the progress of remediation and the costs incurred.

A total project cost of about $9.4 million (present worth) was estimated in the FS. However, the County and the EPA consider a cost for remedial action of about $14 million more reasonable than the $9.4 million estimate contained in the FS. This upward adjustment in cost from $9.4 million to about $14 million is based on the following:

o	FS estimate	$9.4 million
o	Past costs	$1.7 million
o	Phase I	$2.0 million
o	10% Contingency	$1.1 million
	Total	$14.2 million

Table 3 presents the proposed construction sequence and summary cost estimates for the remedial action. Initiation of remedial activities (first year) is assumed to start once the Consent Decree has been entered with the court. The timing of remedial activities presented in this table should be considered preliminary and is intended solely for the purposes of this request for preauthorization. As specified in Section XI of the Scope of Work, a schedule for work plans and other deliverables (which will be based upon a schedule for completion of project tasks) will be submitted within two months of entry of the Consent Decree by the County. However, since this schedule is subject to EPA approval, the EPA has sufficient assurance that the project will be accomplished in a timely manner.

The County's proposed procurement practices were described in the Construction of the Remedy section of this document. These practices will ensure cost-effective choice of general contractors. Proper oversight and management of the project will also ensure efficient remediation.

ASSURANCE OF STATE COOPERATION AND O/M ARRANGEMENTS

The State of Washington will be a party to the Consent Decree in this matter (which includes the Scope of Work). Addi-

TABLE 3

PROPOSED WORK SEQUENCE, INCLUDING COST ESTIMATES:

Description of Work	Cost
	$2,000,000
1st Year	
Data review/design Phase I Construction of pilot systems (Phase I) Additional monitoring wells Air monitoring Alternate water supply	
	$1,600,000
2nd Year	
Air monitoring Phase I evaluation and report Start Phase II design	
	$5,600,000
3rd Year	
Design Phase II Start Phase II construction Begin start-up Additional monitoring wells	
	$3,000,000*
4th Year	
Complete Phase II construction Continue start-up and verification Additional monitoring wells Begin operation and maintenance	
	$ 200,000
5th Year	
Complete start-up and verification Operation and maintenance Periodic evaluation and reports	
ALL FOLLOWING YEARS (total cost, present worth)	$2,000,000

* Includes payment for RI/FS.

tionally, the State will assist the County in funding the remedial action through grant monies and State mixed funding. The State of Washington maintains that such participation constitutes agreement as to the appropriateness of the remedy and assurance of State cooperation.

The County plans on providing for long-term operation and maintenance of the site. A remedial action fund is to be established to provide operating capital for the design, construction, operation, and maintenance of the remedial action. Contributions to the fund are to be made by the PRPs on a schedule of annual payments designed to ensure sufficient monies are available when needed. The proposed schedule for payment is provided for in Section VIII, the Obligations of Consenting Parties, within the Consent Decree (Appendix B).

SCHEDULE FOR AND DOCUMENTATION OF CLAIMS AGAINST THE FUND

As a part of developing cost estimates for the remedy at this site, the County and its consultant have analyzed how the costs would be incurred over time. The goal of this analysis was to ensure that the remedial action trust will, at all times, have sufficient funds for the work to proceed without interruption. Accordingly, the PRPs (the County and Key Tronic) have proposed a schedule of payments in accordance with the Consent Decree. In addition, the County proposes that reimbursement from the Fund be scheduled. The schedule for reimbursement calls for payments from the Fund at those points during the work at which several Tasks will have been completed and at completion of

system start-up. The schedule is set out in more detail in Table 4.

Although the present cost estimate of $14 million represents the best estimate based on available data, EPA and the County recognize that costs may increase due to the uncertainties regarding subsurface conditions. Because of these uncertainties, the parties have agreed that if it becomes necessary to modify the scope of the actions that EPA authorizes pursuant to this request, the County may submit a revised application for preauthorization to reflect these modifications. Any such modifications will be structured to reflect an EPA mixed funding contribution totaling 10 percent of the design, construction, and startup costs.

WORKER TRAINING, HEALTH AND SAFETY

As specified in Section XI of the Scope of Work, a Health and Safety Project Work Plan will be developed for this site. This health and safety plan will be developed by the design consultant to protect individuals from the hazards that might be encountered during remedial action activities at the site. It will be developed based on the toxicological properties of the contaminants present at the site, as well as consideration of relevant government regulations and guidances, including "Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities" (U.S. Department of Health and Human Services 1985), and EPA's "Standard Operating Safety Guides" (Nov. 1984 FOAG). The Health and Safety Plan, as with the other work plans discussed in Section XI of the Scope of Work, requires the

TABLE 4

SCHEDULE OF EPA PAYMENTS FOR THE
COLBERT LANDFILL REMEDIATION

Payment No.	Amount	Schedule*
1	$250,000	Completion of Phase I, including submittal of the Phase I Engineering Report (within about 2 years of entry of the Consent Decree)
2	$670,000	Completion of construction of one or more of the (south, east, or west) Phase II systems (within about 3 years of entry of the Consent Decree)
3	$480,000	Completion of Startup for the three Phase II systems (within about 4 years of entry of the Consent Decree)

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* Specific tasks are more thoroughly described in Table 2 of this document. Payments are to be made following completion of tasks, with documentation by appropriate major milestone reports.

approval of the EPA prior to implementation. Work will not be initiated at the site (Phase I or Phase II) until an EPA-approved health and safety plan has been implemented.

COMMUNITY RELATIONS

The County recognizes that the community should be kept informed during remediation and that community concerns should be considered to the extent practicable. Although the County intends to maintain an active role, Section XXIX of the Consent Decree specifies that the Government Plaintiffs (EPA and Ecology) will be the lead for community relations, while the County will be responsible for helping to coordinate and implement community relations for the site.

The County will (at a minimum) assist in:

- distribution of fact sheets;
- coordination of public meetings;
- provide appropriate County representatives for public meetings and presentations; and
- supply of appropriate documents and information for information repositories.

The County is ready and willing to implement any part of the Community Relations Plan which EPA and Ecology deem "appropriate." The County will cooperate with and support the Governments' community relations effort, and will provide any information needed. Additionally, the County will undertake other community relations activities on request from the EPA and Ecology.

MONITORING AND DOCUMENTATION

Spokane County recognizes that, pursuant to Section 300.69 of the NCP, documentation must be maintained for all phases of response action at this site. The remedial action has not progressed to the point where a detailed documentation plan has been developed. However, appropriate documentation of remedial activity will be accomplished through the submittal of work plans and other deliverables, as specified in Section XI of the Scope of Work. Specifically, documentation will include:

- Health and Safety Plan,
- Quality Assurance Project Plan,
- Phase I Pilot Well Plan,
- Phase I Ground Water Monitoring Plan,
- Phase I Treatment and Discharge Plan,
- Phase II Extraction Well Plan,
- Phase II Ground Water Monitoring Plan,
- Phase II Treatment and Discharge Plan,
- Landfill Closure Plan,
- Alternative Water Supply Plan,
- Plan for Institutional Controls,
- Phase I Engineering Report,
- Phase II Plans and Specifications,
- Phase II Construction Documentation Report; and
- Phase I and Phase II Progress Reports.

The Quality Assurance Project Plan and the various work plans will provide documentation of procedures and practices, construction methodology, and material requirements to be

followed during accomplishment of all aspects of the remedial action. Phase II Plans and Specifications will document the final remedial design; while the Phase II Construction Documentation Report will document the as-built status of the remedial action following completion of construction.

Progress reports will be issued by the County or their design consultant periodically throughout the remedial action. As specified in the Consent Decree, progress reports will be submitted monthly during periods of construction and quarterly thereafter.

The County will maintain all records -- including sampling and QA/QC reports -- generated as a part of the remedial efforts for a minimum of ten years following termination of the Consent Decree.

CONCLUSIONS

The information presented in this Request for Preauthorization has been prepared to meet the prior notification and prior approval requirements of Section 300.25(d) of the NCP for EPA mixed funding. Due to the present status of the remedial action, some of the informational requests outlined within the EPA Preauthorization Guidance Document (EPA 1988) could not be addressed in detail. However, the attached Scope of Work documents the EPA's review and approval authority for specific aspects of the remedial action for which detailed information is not presently available.

EPA mixed funding is an integral part of the Consent Decree negotiated between the EPA and Spokane County. Final agreement and lodging of the Consent Decree cannot be accomplished until this Request for Preauthorization has been reviewed and approved.

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Re: Colbert Landfill
Ref: CERCLA 88-004

DECISION DOCUMENT

PREAUTHORIZATION OF A CERCLA §111(a) CLAIM

Colbert Landfill Site - Spokane County, Washington

STATEMENT OF AUTHORITY

Section 111 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), 42 U.S.C. §§ 9601 et seq., as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA) authorizes the reimbursement of response costs incurred in carrying out the National Contingency Plan (NCP). Section 112 of CERCLA directs the President to establish the forms and procedures for filing claims against the Hazardous Substances Superfund (the Superfund or the Fund). Executive Order 12580 delegates to the Environmental Protection Agency (EPA) the responsibility for such claims. Executive Order 12580 delegates to EPA the authority to reach settlements pursuant to section 122(b) of CERCLA. The Director of the Office of Emergency and Remedial Response (OERR) is delegated authority to evaluate and make determinations regarding claims (EPA Delegation 14-9, September 13, 1987 and EPA Redelegation 14-9 "Claims Asserted Against the Fund," May 25, 1988).

BACKGROUND ON THE SITE

On September 29, 1987, Robie G. Russell, EPA Regional Administrator for Region X, signed the Record of Decision (ROD) for the Colbert Landfill site (hereinafter referred to as the "Site") (Attachment 1). The ROD selected an interim final remedial action for the site that addresses management of migration of contamination using a groundwater interception system and attempts source control through extraction in areas of highest contaminant concentrations. The remedy is considered to be interim final because the extraction and interception well system will be in operation for decades before remediation is complete and changes in the selected remedial action may be required during that period. In summary, the remedy provides for an alternative drinking water supply, installation of additional monitoring wells to define the plume(s), preliminary selection of the types of treatment systems for each geographic portion of the site, treatability studies for each treatment method, preliminary and final designs, installation of the wells and construction of the treatment system and discharge structure, operation of the systems, monitoring and testing, and development and implementation of institutional controls.

In May 1987, EPA provided members of the public, including the group of potentially responsible parties ("PRPs"), with an opportunity to comment on the remedial investigation and feasibility study (RI/FS) of the site and in the selection of the preferred

alternative for cleanup. On January 8, 1988, EPA, pursuant to section 122 of CERCLA, issued special notice letters to three PRPs and notice letters to nine others. In May 1988, EPA and representatives for Spokane County, Key Tronics, Inc., and the U.S. Air Force reached agreement in principle. The agreement provided that two of the PRPs would pay a portion of the cost into a trust fund and that Spokane County would carry out the remedy selected by EPA, and that EPA would reimburse Spokane County for a portion of the costs of implementing the remedy.

On September 12, 1988, Spokane County submitted a formal request for preauthorization as required by section 300.25(d) of the National Contingency Plan (NCP) (40 CFR Part 300).

A consent decree between EPA and Spokane County and Key Tronics is being executed simultaneously with this Decision Document. The Scope of Work, which is appended to the Consent Decree, will be used to implement the remedy selected in the ROD and summarized above.

FINDINGS

Preauthorization (i.e., EPA's prior approval to submit a claim against the Superfund for reasonable and necessary response costs incurred as a result of carrying out the NCP) represents the Agency's commitment that if the response action is conducted in accordance with the preauthorization and costs are reasonable and necessary, reimbursement, subject to any maximum amount of money set forth in the preauthorization decision document, will be had from the Superfund. Preauthorization is a discretionary action by the Agency taken on the basis of certain determinations.

EPA has determined based on its evaluation of relevant documents and Spokane County's request for preauthorization, pursuant to section 300.25(d) of the NCP, that:

(1) A release or potential release of hazardous substances warranting a response under section 300.68 of the NCP exists at the Colbert Landfill site

(2) Spokane County has agreed to implement the cost-effective remedy selected by EPA to address the threat posed by the release at the Site;

(3) Spokane County has demonstrated engineering expertise and a knowledge of the NCP and attendant guidance;

(4) The activities proposed by Spokane County, when supplemented by the terms and conditions contained herein, are consistent with the NCP; and

(5) Spokane County has demonstrated evidence of State cooperation.

In summary, while EPA does not accept as fact all of the statements contained in Spokane County's preauthorization request, the preauthorization request demonstrates a knowledge of relevant NCP provisions and EPA guidance for the conduct of a remedial action. The Consent Decree, the terms and conditions of this preauthorization and, in technical matters, the Scope of Work shall govern the conduct of response activities. In the event of any ambiguity or inconsistency between the Request for Preauthorization and this Preauthorization Decision Document with regard to claims against the Fund, the Preauthorization Decision Document and the Consent Decree shall govern. As stated above, in technical matters, the Scope of Work and the Work Plan, when developed by Spokane County and approved by EPA, shall govern the conduct of response activities.

DECISION AND TERMS AND CONDITIONS

I preauthorize Spokane County to submit a claim(s) against the Superfund for an amount not to exceed the lesser of one million four hundred thousand dollars ($1,400,000), or eleven and one half percent (11.5%) of reasonable and necessary eligible costs, unless such amount is adjusted by EPA pursuant to paragraph 13 below, incurred for remedial design and remedial construction in connection with the remedy set forth in EPA's Record of Decision for the Colbert Landfill site (Exhibit 1 hereto) as specified in the Scope of Work (which is an attachment to the Consent Decree) and the Work Plan when approved by EPA, subject to the terms and conditions set forth below. In the event of any ambiguity or inconsistency between the terms and conditions and the discussion, the terms and conditions shall govern.

1) Spokane County, as provide in the Scope of Work attached to the Consent Decree, shall develop and implement a worker health and safety plan which complies with OSHA Safety and Health Standards: Hazardous Waste Operations and Emergency Response (29 CFR Part 1910.120; 51 Federal Register 45654 et seq., December 19, 1986.

Discussion:

Spokane County's request for preauthorization fully addresses plans for worker health and safety. As a term and condition of preauthorization, Spokane County shall develop a worker health and safety plan which will be reviewed by EPA. The health and safety plan when approved by EPA shall satisfy the requirements of OSHA Safety and Health Standards: Hazardous Waste Operations and Emergency Response (29 CFR Part 1910.120, 51 Federal Register 45654 et seq. December 19, 1986). Spokane County will implement the plan as approved or subsequently revised.

2) Pursuant to Section VII of the Consent Decree, the Scope of Work requires that Spokane County submit plans (i.e., Work Plan) for approval. The Work Plan shall including a plan

for air monitoring during air stripping.

3) Spokane County shall develop a remedial design in accordance with the Scope of Work and EPA's Remedial Design and Remedial Action Guidance. The remedial design to be developed by Spokane County as specified in the Scope of Work shall insure that all actions undertaken by Spokane County shall be undertaken in accordance with the the requirements of all applicable State and Federal laws and regulations and all "applicable" or "relevant and appropriate" Federal and State environmental requirements as identified pursuant to the ROD and pursuant to § 121 of CERCLA. In accordance with Section XXI of the Consent Decree, all activities undertaken by Spokane County off-site shall in addition comply with all required permits, unless an exemption from the requirements of such permits is granted according to law.

4) Modification of remedial design elements or performance requirements contained in the remedial design report shall require approval by the Regional Administrator or his/her designee.

5) Spokane County shall provide for long-term site management (i.e., operation and maintenance) of the Site sufficient to ensure continuing protection of human health and the environment. The costs of operation and maintenance are not eligible for reimbursement. The Work Plan when developed and approved will differentiate between operation and maintenance activities and pump and treatment activities.

6) Spokane County shall develop and implement for remedial design and remedial action:

   a) Procedures which provide adequate public notice of solicitations for offers or bids on contracts. Solicitations must include the evaluation methods and the criteria for contractor selection. EPA shall have the right to disapprove the selection of the architect or engineer and the construction firm(s) selected by the County.

   b) Procedures for procurement transactions which provide maximum open and free competition; do not unduly restrict or eliminate competition; and provide for the award of contracts to the lowest, responsive, responsible bidder, where the selection can be made principally on the basis of price. Spokane County and its contractors shall use free and open competition for supplies, services and construction.

   c) Contracts for construction which include a Differing Site Conditions clause equivalent to that found at 40 CFR §33.1036(4).

d) Procedures to settle and satisfactorily resolve, in accordance with sound business judgment and good administrative practice, all contractual and administrative issues arising out of preauthorized actions. Spokane County shall issue invitations for bids or requests for proposals; select contractors; approve subcontractors; manage contracts in a manner to minimize change orders and contractor claims; resolve protests, claims, and other procurement related disputes; and handle subcontracts to assure that work is performed in accordance with terms, conditions and specifications of contracts.

e) A change order management policy and procedure in accordance with EPA's guidance on State Procurement Under Remedial Cooperative Agreements (OSWER Directive 9375.1-11, June 1988).

f) Detailed quality assurance/quality control plans for remedial design activities (e.g., sampling, monitoring, etc.) and construction activities (e.g., sampling, operations, etc.).

g) A financial management system that consistently applies generally accepted accounting principles and practices and includes an accurate, current and complete accounting or all financial transactions for the project, complete with supporting documents, and a systematic method to resolve audit findings and recommendations.

7) EPA shall have the right to disapprove the project manager selected by Spokane County. Spokane County shall submit to EPA a justification to perform project management in-house or contract it out. The justification shall take into account cost, time, and reliability of in-house versus contracted project management.

Discussion:

Spokane County's request for preauthorization did not contain a justification for its proposal to utilize an in-house project manager as requested in EPA's Preauthorization Guidance (Reasonable Cost, page 7).

8) Spokane County shall advise EPA prior to the issuance of a solicitation for construction of the remedy using other than a fixed price contract.

Discussion:

Spokane County's request for preauthorization stated that it anticipates that the contract for construction of Phase II will be based on a fixed price rather than cost reimbursement. EPA's Preauthorization Guidance

(Reasonable Cost, page 7) requests an explanation if the applicant proposes to use other than the formal advertising/sealed bidding procurement method which results in a fixed price contract awarded to the lowest responsive, responsible bidder for construction. Therefore, as a term and condition of preauthorization, Spokane County shall notify EPA prior to issuing a solicitation for construction of Phase II using a negotiated procurement.

9) Spokane County shall provide EPA and its agents with site access as set forth in Section XXII of the Consent Decree and shall immediately notify the Agency if they are unable to initiate or complete the preauthorized response action.

10) In submitting claims to the Superfund, Spokane County shall:

a) Document that response activities were preauthorized by EPA;

b) Substantiate all claimed costs through a financial management system as described in paragraph 6(g); and

c) Document that all claimed costs were eligible for reimbursement pursuant to this preauthorization and are reasonable and necessary in accordance with the appropriate Federal cost principles.

Discussion:

See paragraph 15 for additional references to the Federal cost principles.

11) Spokane County shall maintain all cost documentation and any records relating to its claim for a period of not less than six years from the date on which the final claim has been submitted to the Superfund, and shall provide EPA with access to their records. At the end of the six-year period, Spokane County shall notify EPA of the location of all records. Spokane County shall allow EPA the opportunity to take possession of the records before they are destroyed; this requirement is in addition to the record retention requirement located at Section XIII of the Consent Decree.

12) Claims may be submitted against the Superfund only while the Spokane County is in compliance with the terms of the Consent Decree and no more frequently than intervals of:

(a) completion of Phase II Design (approximately 3 years);

(b) completion of Construction (approximately 4 years); and

(c) completion of Startup and Verification (approximately 5 years);

13) If the Spokane County finds it necessary to seek to modify the actions that EPA preauthorized, Spokane County may ~~may~~ submit to EPA a revised application for preauthorization. In addition, Spokane County may submit a revised application for preauthorization upon EPA's determination of the requirements for final closure of the Site. EPA will consider such an application for preauthorization in a timely manner and will subject to the availability of appropriated funds amend the maximum dollar amount for which Spokane County may submit claims to the Fund. The maximum amount for which Spokane County may submit claims will be determined according to the criteria used in approving the County's application for preauthorization and shall equal 11.5% of reasonable and necessary eligible costs to implement the the approved remedy.

14) Claims shall be submitted to the Director, Office of Emergency and Remedial Response, EPA, Washington, D.C. EPA shall provide the appropriate form(s) for such claims.

15) EPA may adjust claims using the facilities and services of private insurance and claims adjusting organizations or Federal personnel. In making a determination whether costs are allowable, the claims adjuster will rely upon the appropriate Federal cost principles (non-profit organizations - OMB Circular A-122; profit making organizations - 48 CFR Subparts 31.1 and 31.2). Where additional costs are incurred due to acts or omissions by the County, payment of the claim will be adjusted accordingly. EPA may require Spokane County to submit any additional information needed to determine whether the actions taken were reasonable and necessary.

16) At least 60 days before filing a claim against the Fund for the remedial action, Spokane County shall present in writing all claims to any person known to Spokane County who may be liable under section 107 of CERCLA for response costs incurred in carrying out the Consent Decree. If the first claim was denied by the responsible party or not responded to, and EPA agrees that there is no reason to believe that subsequent claims would be honored by such responsible party, the denial of the first claim, or lack of response, shall be considered denial of every subsequent claim.

17) Payment of any claim shall be subject to Spokane County subrogating to the United States its rights as claimant to the extent to which its response costs are compensated from the Superfund. Further, Spokane County shall cooperate with any cost recovery action which may be initiated by the United States. The Spokane County and Spokane County's contractors shall furnish the personnel, services, documents, and materials needed to assist EPA in the collection of evidence to document work performed and costs expended by Spokane County or the

County's contractors at the Site in order to aid in cost recovery efforts. Assistance shall also include providing all requested assistance in the interpretation of evidence and costs and providing requested testimony. All of Spokane County's contracts for implementing the remedy shall include a specific requirement that the contractors agree to provide this cost recovery assistance.

18) Eligible costs are those costs incurred, consistent with the NCP, in carrying out the remedial action, subject to the following limitations:

a) Costs may be reimbursed only if incurred after the date of this preauthorization;

b) Costs may be reimbursed only for design and construction of the remedy at the Site as provided herein. Such costs shall not include any of the oversight costs incurred by EPA or the Department of Ecology for the State of Washington, investigatory costs, or past response costs that were incurred by EPA or the State of Washington prior to the effective date of the Consent Decree.

c) Costs incurred for long-term operation and maintenance, as described in paragraph 5, are not eligible for reimbursement from the Superfund.

d) Costs incurred for the payment of a person who is listed in the List of Parties Excluded From Federal Procurement or Non-Procurement, established pursuant to Executive Order 12549, May 26, 1988, at the time the contract is awarded shall not be eligible for reimbursement unless Spokane County obtains approval from EPA pursuant to 40 CFR Part 32 prior to incurring the obligation.

e) Costs incurred for the payment of contractor claims either through settlement of such claims or an award by a third party may be reimbursed from the Fund to the extent EPA determines that:

(i) the contractor claim arose from work within the scope of the contract at issue and the contract was for activities which were preauthorized;

(ii) the contractor claim is meritorious;

(iii) the contractor claim was not caused by the mismanagement of Spokane County;

(iv) the contractor claim was not caused by Spokane County's vicarious liability for the improper actions of others;

(v) the claimed amount is reasonable and necessary;

(vi) the claim for such costs is filed by Spokane County within 5 years of completion of the preauthorized activities; and

(vii) payment of such a claim will not result in total payments from the Fund in excess of the amount preauthorized.

Discussion:

"Contractor claim" means the disputed portion of a written demand or written assertion by any contractor who has contracted with Spokane County pursuant to the Consent Decree to perform the remedial action, seeking as a matter of right, the payment of money, adjustment, or interpretation of contract terms, or other relief, arising under or related to a contract, which has been finally rejected or not acted upon by Spokane County and which is subsequently settled by Spokane County or an award by a Third Party through the Disputes Clause of the contract document.

f) An award by a third party on a contractor claim should include:

(i) findings of fact;

(ii) conclusions of law;

(iii) allocation of responsibility for each issue;

(iv) basis for the amount of award; and

(v) the rationale for the decision.

g) Interest accrues on amounts due Spokane County pursuant to this agreement where EPA fails to pay the amount within sixty (60) days of EPA's receipt of a completed claim from Spokane County. A completed claim is a demand for a sum certain which includes all documentation required to substantiate the appropriateness of the amounts claimed. Where Spokane County submits a claim which is technically complete but for which EPA requires additional information in order to evaluate the amount claimed, interest will not accrue on the claim until sixty (60) days after EPA's receipt of the requested additional information. The rate of interest paid on a claim is the rate of interest on investments of the Superfund established by subchapter A of chapter 98 of the Internal Revenue Code of 1954.

h) For a period not to exceed 5 years from completion of startup and verification, costs incurred for restoration of ground water shall be eligible for recovery until EPA determines that the ground water contaminant levels have been reduced to the levels as prescribed in the ROD.

19) If any material statement or representation made in the application for preauthorization is false, misleading, misrepresented, or misstated and EPA relied upon such statement in making its decision, the preauthorization by EPA may be withdrawn following written notice to Spokane County. Disputes arising out of EPA's determination to withdraw its preauthorization shall be governed by Section XXVII of the Consent Decree. Criminal and other penalties may apply (see Exhibit 3).

20) The Superfund is not hereby obligated to reimburse Spokane County for subsequent remedial actions not covered by this preauthorization caused by failure of the original remedy if those actions are necessary as a result of the failure of Spokane County, their employees or agents, or any third party having a contractual relationship with Spokane County to properly perform activities under the Work Plan and any modification thereto approved by EPA and in conformance with the terms and conditions of this pre-authorization decision document. The foregoing shall not apply if the remedy fails for any other reason. EPA may require Spokane County to submit any additional information needed to determine whether the actions taken were in conformance with the Work Plan and were reasonable and necessary.

21) This preauthorization shall be effective as of the date of entry of the Consent Decree by the Court.

Henry L. Longest II — 9/30/87
Date

Henry L. Longest II
Director, Office of
Emergency and Remedial Response

EXHIBITS

1. EPA Record of Decision for the Colbert Landfill Site
2. Consent Decree
3. Civil and Criminal Penalties

SUPPLEMENTAL MEMORANDUM IN SUPPORT
OF MOTION FOR ENTRY OF CONSENT DECREE

EXHIBIT F

VIII

ALTERNATIVE WATER SUPPLY

If any compound originating from the site is identified in any domestic water supply well in use prior to the date of entry of this Consent Decree, or installed in uncontaminated areas after entry of this Consent Decree, at a concentration exceeding the Performance Standards, a new sample shall be taken by the County within one week of receipt of the analysis of the first sample. The new sample shall be analyzed on an expedited schedule. If the second sample confirms that the concentrations exceed Performance Standards, the County will promptly provide an alternative drinking water supply source to the residence. At the County's discretion, the new water supply may include, but is not limited to, extension of existing wells to uncontaminated areas of the aquifer, supply of bottled water (on an interim basis), or connection of the affected residence to the Whitworth Water Supply System or an approved Class IV system. The County shall be responsible only to provide a drinking water supply to those impacted residences in an amount equal to the drinking water supply standards for residences established by the Department of Social and Health Services in effect at the time of entry of this Consent Decree, or the annual average production of the well, whichever is less.

If any compound originating from the site is identified in any domestic water supply well in use prior to the date of entry of this Consent Decree, or installed in uncontaminated areas after entry of this Consent Decree, at a concentration exceeding 65 percent of the Table IV-1 evaluation criteria, a new sample shall be taken by the County within one month of receipt of analysis of the first sample. The new sample shall be analyzed within one month. If the second sample confirms that the concentration exceeds the 65 percent level, that supply well shall be placed on a sampling frequency of once every month for a period of one year. The confirming sample and subsequent monthly samples (if required) will be analyzed in accordance with the procedures set forth in the applicable (Phase I or Phase II) groundwater monitoring work plan.

If the average concentration over that 12-month period exceeds 65 percent of any of the Table IV-1 evaluation criteria, the County will provide an alternate water supply to that residence. If the average concentration is below the 65 percent level, that well may be returned to the regular monitoring schedule. Without admitting any legal obligation to do so, the County will provide an alternate water supply to the following residences, if desired: (b) (6) (b) (6) (b) (6)

In the event that operation of the Remedial Action adversely mpacts the yield of supply wells in use prior to the date of ntry of this Consent Decree, or installed in uncontaminated reas after entry of this Consent Decree, the County will itigate the impact. For this purpose, adverse impact is defined s a reduction in water supply to levels below the lesser of:

1. The discharge rate and total allowable annual volume defined by a valid water right, filed with the State of Washington with a priority date prior to entering of this Consent Decree.

   If water is being used without a valid water right, the user will only be entitled to mitigation with respect to the quantity defined by the laws of the State of Washington as being exempt from the filing requirements.

2. The capacity of the supply well in gallons per day.

In order to require the County to mitigate such adverse pacts, the following conditions must be met:

1. Access to the impacted well must be granted by the property owner to the County prior to and during the implementation of the Remedial Action. The County may, at its discretion: a) monitor water level elevations within the well; b) measure the well depth;
   c) accomplish a well capacity test; and/or
   d) accomplish any other tasks, procedures or tests deemed appropriate by the County or required by the Government Plaintiffs to evaluate the possible future impact of the Remedial Action.

2. In the event that the County chooses not to monitor a well and a claim is subsequently made by the property owner alleging adverse impact by the Remedial Action, the owner may be requested to sign an affidavit detailing the extent of the impact.

If it is determined that a supply well has been adversely impacted by the Remedial Action, the County may, at its discretion, elect to take any of the following actions:

1. Provide an alternative water supply;

2. Modify the operation of the extraction wells;

3. Modify the supply well system. Modifications may include repositioning of the pump or the addition of a pressurized storage tank;

APPENDIX B

Project Health and Safety Plan

Final Health and Safety Plan

Phase II Remedial Design/Remedial Action
Colbert Landfill
Spokane, Washington

August 17, 1992

Prepared for

Spokane County, Washington

Prepared by

Landau Associates, Inc.
P.O. Box 1029
Edmonds, WA 98020-9129
(206) 778-0907

ADDENDUM 1[a]

TO HEALTH AND SAFETY PLAN
COLBERT LANDFILL
PHASE II RD/RA ACTIVITIES

NOVEMBER 20, 1992

1.0 INTRODUCTION

The purpose of this addendum to the existing Colbert Landfill RD/RA Health and Safety Plan (Landau Associates 1992) is to provide clarification of specific health and safety requirements for the field tasks associated with landfill closure design. These field tasks include excavation of areas of the landfill through the existing cover material to investigate cover thickness and the nature of underlying solid waste material. The requirements of the existing Colbert Landfill Health and Safety Plan apply to these tasks.

All individuals must read this addendum prior to participating in tasks related to this work. If any information presented in this addendum is unclear, the reader must contact the Site Safety Officer, the Landau Associates Field Coordinator, or the Landau Associates Project Manager for clarification prior to participating in any intrusive field activity. Once this addendum has been read and understood, the individual must sign on the last page of this addendum, and this signed form will be placed in the job file. A training session will be conducted prior to the initiation of this work to discuss this addendum.

2.0 DESCRIPTION OF SITE WORK

The depth of the existing cover at the Colbert Landfill is not accurately known and may vary substantially across the site. This variation may affect final grading and cap design. Therefore, up to sixty shallow test pits will be excavated for the purpose of characterizing this variation. In addition to characterizing the soil cover, the physio-chemical characteristics of the underlying refuse will be noted, as well as the gas emission potential of the material and existing soil gas characteristics. Test pits will be excavated to a maximum of 20 ft, although most are expected to be less than 6 ft in depth. Monitoring for volatile organic vapors and combustible gas will be conducted from the top of the test pit using extended gas sensors. It is

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(a) The original of this Health and Safety Plan addendum will be filed in the project file. A copy of this addendum is to be placed with the Health and Safety Plan maintained in the support zone trailer and in each field vehicle.

assumed that excavated refuse will be removed and replaced in the test pit excavation without special handling or decontamination procedures.

3.0 WORK AREAS

For the purpose of this work, an exclusion zone will be established by traffic cones or caution tape that encompasses the area where excavation activities are in progress. This area will be designated only for the purpose of controlling access in the area of intrusive activity. Decontamination of workers and heavy equipment is not required prior to movement of the exclusion zone to the next area of excavation.

4.0 AIR MONITORING AND ACTION LEVELS FOR RESPIRATORY PROTECTION

Air monitoring will be conducted for volatile organic compounds and methane, using a photoionization detector (PID) and combustible gas indicator (CGI), respectively, consistent with the requirements of the Project Health and Safety Plan. The CGI is contained within the MSA 361 instrument, which monitors for combustible gas, oxygen, and hydrogen sulfide. In addition to periodic breathing space monitoring of equipment operators and other personnel in the exclusion zone, monitoring of test pit gas will be conducted from the top of the test pit using equipment extensions.

Action levels for donning respiratory protection are the same as those identified in the Health and Safety Plan, with the exception that a full face respirator must be worn during test pit entry, regardless of monitoring results, as described in the following section.

It should be noted that the sensitivity of the 10.2 eV lamp in the PID to the volatile organic constituents of concern (TCA, DCA, TCE, PCE, and methylene chloride) is limited. Action levels for donning respiratory protection for these constituents have been adjusted downward based on the permissible exposure limit of these constituents and this limited sensitivity. The PID is not sensitive to methane.

An additional cause for concern when methane gas is venting from a landfill is that it may "purge" other more actively toxic gases, such as hydrogen sulfide (H_2S) along with it. H_2S concentrations may be monitored on the MSA 361 directly in ppm, concurrently with combustible gas measurements.

The 8-hour time weighted average permissible exposure limit (PEL) for H_2S is 10 ppm and the 15-minute short-term exposure limit (STEL) is 15 ppm. The "Immediately Dangerous to Life and Health" (IDLH) level is 300 ppm.

Air purifying respirators equipped with organic vapor/acid gas cartridges are quite effective in removing H_2S but are not approved for such use due to the potential for the sudden build up of IDLH concentrations. The nose experiences "olfactory fatigue" after a short exposure to H_2S, and the warning property of the gas (odor) is no longer effective. Therefore, the use of cartridge-type air purifying respirators in atmospheres containing H_2S at concentrations in excess of the PEL or STEL is permitted only for escape. Entry into any atmosphere containing greater than 10 ppm H^2S (15 ppm STEL) requires use of a pressure demand supplied air respirator.

At concentrations of a few ppm in the breathing zone, the odor nuisance would be such that site personnel would voluntarily don their respirators. Such use of air purifying respirators is acceptable but once air purifying respirators are donned, H_2S concentrations must be monitored continuously. The H_2S action level for donning respirators is 5 ppm, at which time the MSA 361 will be set up to run continuously. If concentrations in the breathing zone exceed 10 ppm for more than an hour, 15 ppm for more than 15 minutes, or at any time exceed 25 ppm, work shall be temporarily halted and the area evacuated until H_2S levels subside.

5.0 TEST PIT ENTRY

In the event that entry into the test pit is required by site personnel, entry will be conducted only if the requirements of WAC 296-155, Part N (Requirements for Excavation, Trenching and Shoring), are met. This portion of the state construction health and safety requirements has been attached to this addendum for reference. Specifically, these regulations require that any excavation 4 ft or more in depth to be shored, sheeted, braced, sloped, or otherwise supported by means of sufficient strength to protect employees. Sloping requirements vary depending on the type of soil encountered. Specific requirements for determining the appropriate excavation protection system by soil type are provided in WAC 296-155, Part N (see attached).

Anyone entering a test pit greater than 4 ft deep is required to wear a full face respirator, even if air monitoring results indicate that action levels are below those required for respiratory protection in the Health and Safety Plan. Entry into the test pit is prohibited if the PEL reading exceeds 100 ppm or if the CGI reading exceeds 20 percent LEL. Air monitoring will be conducted continuously while personnel are in the test pit, and personnel will immediately evacuate if the PID reading exceeds 100 ppm above background or the CGI reading exceeds 20 percent LEL, which is consistent with the requirements of the Project Health and Safety Plan.

6.1 PERSONAL EQUIPMENT

The level of protection selected for this work phase is modified Level D, as specified in Section 6.2 of the Project Health and Safety Plan. A full face respirator with organic vapor/acid gas/high efficiency particulate cartridges will be available to all personnel at all times in the event that air monitoring results (specified in Sections 4.0 and 5.0 of this addendum and Table 5-1 of Project Health and Safety Plan) indicate that upgrade to Level C is necessary.

7.0 PERSONNEL AND EQUIPMENT DECONTAMINATION

Personnel and equipment decontamination will not be required as the exclusion zone is successively moved to conduct excavations. Personnel and equipment decontamination will be conducted consistent with the requirements of the Health and Safety Plan when exiting from the landfill site.

REFERENCES

Landau Associates, Inc. 1992. Final Health and Safety Plan, Phase II Remedial Design/Remedial Action, Colbert Landfill, Spokane, Washington. August 17, 1992.

ADDENDUM 1 ACKNOWLEDGEMENT

I have read this addendum to the Colbert Landfill RD/RA Health and Safety Plan. I have discussed any questions I have regarding this addendum with my supervisor and/or the Site Safety Office, and I understand the requirements.

Signature of Site Personnel Briefed:

Name: _____ Date: _____

Supervisor: _____ Date: _____

ATTACHMENT TO ADDENDUM 1

Part N
Excavation, Trenching, and Shoring

WAC

WAC 296-155-650, Definitions applicable to this part.

(1) "Accepted engineering requirements or practices." Those requirements or practices that are compatible with standards required by a registered professional engineer.

(2) "Actual slope." The slope of which an excavation site is excavated.

(3) "Aluminum hydraulic shoring." A preengineered shoring system comprised of aluminum hydraulic cylinders (crossbraces) used with vertical rails (uprights) or horizontal rails (walers). Such system is designed, specifically to support the sidewalls of an excavation and prevent cave-ins.

(4) "Cave-in." The separation of a mass of soil or rock material from the side of an excavation, or loss of soil from under a trench shield or support system, and movement into the excavation in quantity that it could entrap, bury, injure, or immobilize a person.

(5) "Competent person." One who can identify existing or predictable hazards in the surroundings that are unsanitary, hazardous, or dangerous to employees. Also has authorization or authority by the nature of their position to take prompt corrective measures to eliminate them. The person shall be knowledgeable in the requirements of this part.

(6) "Cross braces." The horizontal members of a shoring system installed perpendicular to the sides of the excavation, the ends bear against either uprights or wales.

(7) "Distress." Soil in a condition where a cave-in is imminent or likely to occur. Distress indications may be fissures, slumping, spalling, ravelling, or small amounts of materials separating from the face. The bottom may bulge or heave and the edge may sink or lower.

(8) "Equipment." Ladders, scaffolds, ramps, runways, railings, barricades, sheet piling, shoring, bracing and any such safeguards. Protective construction and devices used in affording protection to the workers engaged in excavation work.

(9) "Embankment." An artificial or man-made bank of earthen material.

(10) "Excavation." Any man-made cavity or depression in the earth's surface, including its sides, walls, or faces, formed by earth removal and producing unsupported earth conditions by reasons of the excavation. If installed forms or similar structures reduce the depth-to-width relationship, and excavation may become a trench.

WAC 296-155-650 (Continued)

(11) "Faces or sides." The vertical or inclined earth surfaces formed because of excavation work.

(12) "Failure." The breakage, displacement, or permanent deformation of a structural member or connection to reduce its structural integrity and its supportive capabilities.

(13) "Kickouts." Accidental release or failure of a shore or brace.

(14) "Maximum allowable slope." The steepest incline of an excavation face that is acceptable for the most favorable site conditions as the ratio of horizontal distance to vertical rise (H:V).

(15) "Moving ground." Any ground, which for any reason, will not remain in its original location.

(16) "Protective system." A method of protecting employees from cave-ins, from material that could fall or roll from an excavation face or into an excavation, or from the collapse of adjacent structures. Protective systems include support systems, sloping systems, shield systems, and other systems that provide the necessary protection.

(17) "Ramp." An inclined walking or working surface used as access from one point to another. They may be constructed from earth or materials such as steel or wood.

(18) "Registered professional engineer." A person that is registered as a professional engineer in the state of Washington. The registered professional engineer shall comply with the Washington state department of licensing requirements, chapter 18.43 RCW.

(19) "Sheeting." The members of a shoring system that retain the earth in position and in turn are supported by other members of the shoring system:

Tight sheeting: The use of specially-edged timber planks (e.g., tongue and grove) at least three inches thick, steel sheet piling, or similar construction that when driven or paced in position provide a tight wall to resist the lateral pressure of water and to prevent the loss of backfill material.

Close sheeting: The placement of planks side-by-side allowing as little space as possible between them.

(20) "Sheet pile." A pile, or sheeting, that may form a continuous interlocking line. A row of timber, concrete, or steel piles, driven in close contact providing a tight wall to resist the lateral pressure of water, adjacent earth, or other material.

(21) "Shield (shield system)." A structure that can withstand the forces imposed on it by a cave-in and thereby protect employees within the structure. Shields can be permanent structures or designed to be portable and moved along as work progresses. Shields can be premanufactured or job-built according to data from the manufacture or designed by a registered professional engineer. Shields used in trenches are usually called "trench boxes" or "trench shields."

(22) "Shoring (shoring system)." A structure such as a metal hydraulic, mechanical, or timber shoring system that supports the sides of an excavation that is designed to prevent cave-ins.

(23) "Sides," "walls," or "faces." The vertical or inclined earth surfaces formed because of excavation work.

WAC 296-155-650 (Continued)

(24) "Sloping (sloping system)." A method of protecting employees from cave-ins by excavating to form sides of an excavation that are inclined away from the excavation to prevent cave-ins. The angle of incline required to prevent a cave-in varies with differences in such factors as the soil type, environmental conditions or exposure, and application of surcharge loads.

(25) "Support system." A structure such as underpinning, bracing or shoring, which provides support to an adjacent structure, underground installation, or the sides of an excavation.

(26) "Trench." A narrow excavation made below the surface of the ground. The depth is generally greater than the width, but the width of a trench is not greater than 15 feet.

(27) "Trench jack." Screw or hydraulic type jacks used as cross bracing in a trench shoring system.

(28) "Trench shield" or "trench box." See shield in this section.

(29) "Upright." The vertical members of a trench shoring system placed in contact with the earth and usually positioned so that individual members do not contact each other. Uprights placed so that individual member are closely spaced, in contact with or interconnected to each other, are often called "sheeting."

(30) "Unstable rock." Rock material on the side or sides of the excavation not secured against caving-in or movement by rock bolts or by another protective system that has been designed by a registered professional engineer.

(31) "Unstable soil." Earth material, other than running because of its nature cannot be depended upon to remain in place without extra support that would be furnished by a system of shoring.

(32) "Wales." Horizontal members of a shoring system placed parallel to the excavation face whose sides bear against the vertical members of the shoring system or earth. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-155-650, filed 1/10/91, effective 2/12/91; Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-650, filed 1/21/86. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-155-650, filed 6/17/81; Order 74-26, § 296-155-650, filed 5/7/74, effective 6/6/74.]

WAC 296-155-655, General protection requirements.

(1) Protection systems for use in excavations more than 20 feet in depth shall be designed by a registered professional engineer according to WAC 296-155-66109.

(2) Trench and excavation protection. Except in solid rock, the sides of trenches and excavations, including embankments, 4 feet or more in depth shall be shored, sheeted, braced, sloped, or supported by a means of sufficient strength to protect employees.

(3) Protection for trenches less than 4 feet. Trenches less than 4 feet in depth shall be effectively protected when there are indications that hazardous ground movement is possible.

(4) Storage of excavated material.

(a) In excavations or trenches that employees are required to enter, excavated or other material shall be stored and retained at least 2 feet away from the edge of the excavation or trench.

(b) Barriers or other effective retaining devices may be used to prevent excavated or other material from falling or rolling into the excavation or trench.

WAC 296-155-655 (Continued)

(5) Excavation and trench exits. When employees are required to be in excavations or trenches 4 feet deep or more, an adequate means of exit, such as a ladder or steps, shall be provided and located within 25 feet of lateral travel. An earth ramp is acceptable providing all following requirements are met:

(a) The stability of the earth is adequate for good footing; and

(b) The total travel distance does not exceed 25 feet; and

(c) Adequate shoring or equivalent protection is provided for the entire escape route.

(6) When sloping does not extend to the bottom of the trench, shoring shall be required to support the vertical part of the trench. The shoring shall extend above the bottom of the slope a minimum of 18 inches to prevent material from sliding or rolling into the trench.

(7) Surface encumbrances. Trees, boulders, utility poles and other surface encumbrances, located to create a hazard to employees involved in excavation or trenching work or in the vicinity during operations, shall be removed or made safe before excavation or trenching is begun or continued.

(8) Installation and removal of support.

(a) Members of support systems shall be securely connected to prevent sliding, falling, kickouts, or other predictable failure.

(b) Support systems shall be installed and removed in a way that protects employees from cave-ins, structural collapses, or from other members of the support system.

(c) Individual members of support systems shall not be subjected to loads exceeding their design.

(d) Before removal of individual members begins, additional precautions shall be taken to ensure the safety of employees installing other structural members to carry the loads imposed on the support system may be required.

(e) Removal shall begin at the bottom of the excavation. Members shall be released slowly, noting any indication of possible failure of the remaining members or possible cave-in.

(f) Backfilling shall progress together with the removal of support systems from excavations.

(9) Physical barrier protection.

(a) Adequate physical barrier protection shall be provided at all remotely located excavations or trenches.

(b) All wells, pits, shafts, etc., shall be barricaded or covered.

(c) Upon completion of exploration and similar operations, temporary wells, pits, shafts, etc., shall be completely backfilled.

WAC 296-155-655 (Continued)

(10) Inspections.

(a) Daily inspections of excavations, adjacent areas, and protective systems shall be made by a competent person for a situation that would result in cave-ins, failure of protective systems, or other hazardous conditions. An inspection shall be conducted by the competent person before the start of work and as needed throughout the shift. Inspections shall be made after every rainstorm or other hazard increasing occurrence.

(b) When the competent person finds evidence of a situation that could result in a possible cave-in, failure of protective systems or other hazardous conditions, exposed employees shall be removed from the area until the necessary precautions have been taken.

(11) Manufactured materials and equipment used for protective systems shall be used and maintained consistent with the manufacturer's recommendations.

(12) Stability of adjacent structures.

(a) Where the stability of adjoining buildings, walls, or other structures is endangered by excavation operations, support systems shall be provided to ensure their stability.

(b) Excavation below the level of the bases or footing of any foundation or retaining wall that could be reasonably expected to pose a hazard to employees shall not be permitted unless:

(i) A support system is provided to ensure the safety of employees and the stability of the structure; or

(ii) The excavation is in stable rock; or

(iii) A registered professional engineer has determined the structure is sufficiently removed from the excavation and unaffected by the excavation; or

(iv) A registered professional engineer has determined such excavation work will not pose a hazard to employees.

(c) Sidewalks, pavements, and other structures shall not be undermined unless a support system or another method of protection is provided to protect employees from the possible collapse.

(13) Underground utilities. Before opening an excavation or trench, underground utilities such as sewer, telephone, fuel, electric, water line, or other installations shall be located. The appropriate utility company shall be notified and requested to identify the exact location of the underground installation.

(a) Proper supports and precautions shall be provided for existing utility installations.

(b) When electric lines are of the direct burial type, a qualified person shall make positive identification of the cable.

(c) Mechanical excavating equipment shall maintain a 2 foot clearance from the direct burial cable.

(14) When excavation operations approach the location of underground installations, the exact location of the installations shall be determined by safe and acceptable means.

WAC 296-155-655 (Continued)

(15) While the excavation is open, underground installations shall be protected, supported, or removed as necessary to safeguard employees.

(16) Water main safeguards. When existing loop water mains are running laterally within two feet of the excavation or trench wall, the valve the greatest distance from the work site shall be closed.

(a) The exact location of the open valve and the valve key shall be given to the workers before they enter the excavation or trenches.

(b) The open valve location shall be marked and clear access to the valve maintained.

(17) Protection from hazards associated with water accumulation. Employees shall not work in excavation when water is accumulating unless adequate precautions have been taken to protect employees against the hazards of water accumulation. Precautions necessary to protect employees adequately vary with each situation, but could include special support, shield systems to protect from cave-ins, or water removal to control the water level.

(18) Surface water control. Diversion ditches, dikes, adequate drainage, or other suitable means shall be used next to the excavation or trench to prevent surface water from entering.

(19) Ramps and runways.

(a) Ramps or runways used for vehicles shall be of a width of not less than four feet wider than the vehicle used and shall be provided with:

(i) Timber guards no less than 8 inches by 8 inches placed parallel to and secured to the sides of the runway or ramp; or

(ii) Berms on earthen ramps; or

(iii) Other equivalent protection.

(b) All ramps and runways shall receive daily inspection, and shall be maintained in a safe and serviceable condition.

(c) Workers shall stay off ramps and runways when vehicles are passing over them.

(d) All ruts and holes shall be filled in, humps leveled off, and the runway or ramp made smooth.

(20) Walkway and bridge requirements. Where employees or equipment cross over excavations or trenches, walkways or bridges with standard guardrails shall be provided. Such walkways or bridges shall be designed and constructed by competent persons according to accepted engineering requirements and practices.

(21) Employees next to excavations, and not directly involved in the excavation work, shall be protected by standard guardrails or equivalent means to prevent their falling.

(22) Top person. No person shall be allowed to work in a trench over 4 feet in depth unless there is a top person in constant attendance. The top person shall be in addition to the equipment operator when the person in the trench is not in constant view of the equipment operator.

WAC 296-155-655 (Continued)

(23) Signalperson. Signalpersons shall be used to direct equipment when backfilling when the operator does not have a clear view of the excavation.

(24) Stop logs. When mobile equipment is used or allowed next to excavations or trenches, stop logs, or barricades shall be installed. Such devices shall not be required for equipment doing the actual excavating or backfilling operation.

(25) Dust control. Dust conditions shall be minimized by using water, or other effective means. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-155-655, filed 1/10/91, effective 2/12/91; Statutory Authority: RCW 49.17.040 and 49.17.050. 86-03-074 (Order 86-14), § 296-155-655, filed 1/21/86. Statutory Authority: RCW 49.17.040, 49.17.050 and 49.17.240. 81-13-053 (Order 81-9), § 296-155-655, filed 6/17/81; Order 76-29, § 296-155-655, filed 9/30/76; Order 74-26, § 296-155-655, filed 5/7/74, effective 6/6/74.]

WAC 296-155-657, Sloping Systems.

(1) Scope and application. This section contains specifications for sloping used as a method of protecting employees working in excavations from cave-ins.

(2) Soil and rock deposits shall be classified according to WAC 296-155-664, Appendix A.

(3) Design of sloping systems. Slopes and configurations shall be selected and constructed by the employer or his designee and shall be according to the requirements of this section.

(4) Maximum allowable slope. The maximum allowable slope for soil or rock deposit shall be determined from Table 1.

(5) Actual slope.

(a) The actual slope shall not be steeper than the maximum allowable slope.

(b) The actual slope shall be less steep than the maximum allowable slope when there are signs of distress. If that situation occurs, the slope shall be cut back to an actual slope that is at least 1/2 horizontal to 1 vertical (1/2H:1V) less steep than the maximum allowable slope.

(c) When surcharge loads from stored material, equipment or traffic is present, a competent person shall determine the degree the actual slope must be reduces below the maximum allowable slope, and shall assure the reduction is achieved.

(6) Configurations. Configurations of sloping systems shall be according to Figures A-1 through D-6.

(7) Sloping systems. Employees shall not work on the faces of sloped excavations at levels above other employees unless employees at the lower levels are protected from the hazard of falling, rolling, sliding material, or equipment.

WAC 296-155-657 (Continued)

TABLE 1
MAXIMUM ALLOWABLE SLOPES

SOIL OR ROCK TYPE	MAXIMUM ALLOWABLE SLOPES (H:V) [1] FOR EXCAVATIONS LESS THAN 20 FEET DEEP [2]
STABLE ROCK TYPE A TYPE B TYPE C	VERTICAL (90°) 3/4:1 (53°) 1:1 (45°) 1 1/2:1 (34°)

NOTES:

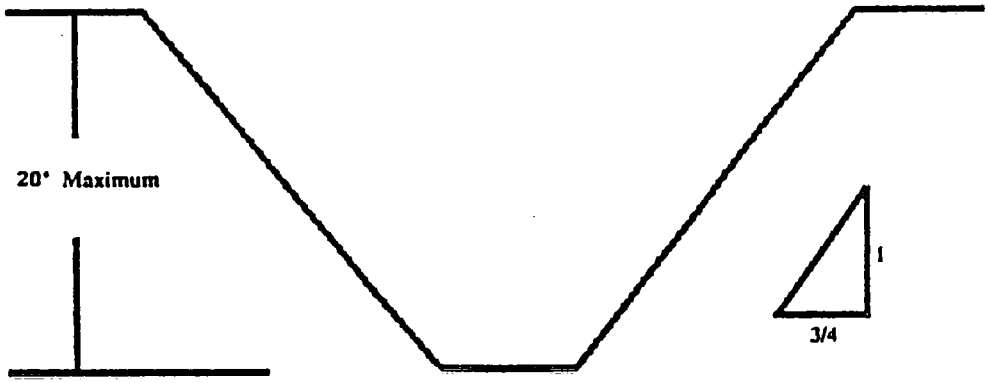
[1] Numbers shown in parentheses next to maximum allowable slopes are angles expressed in degrees from the horizontal. Angles have been rounded off.

[2] Sloping for excavations greater than 20 feet deep shall be designed by a registered professional engineer.

Figure A-1

Slope Configuration for *Type A* Soil

(All Slopes stated below are in the horizontal to vertical ratio)



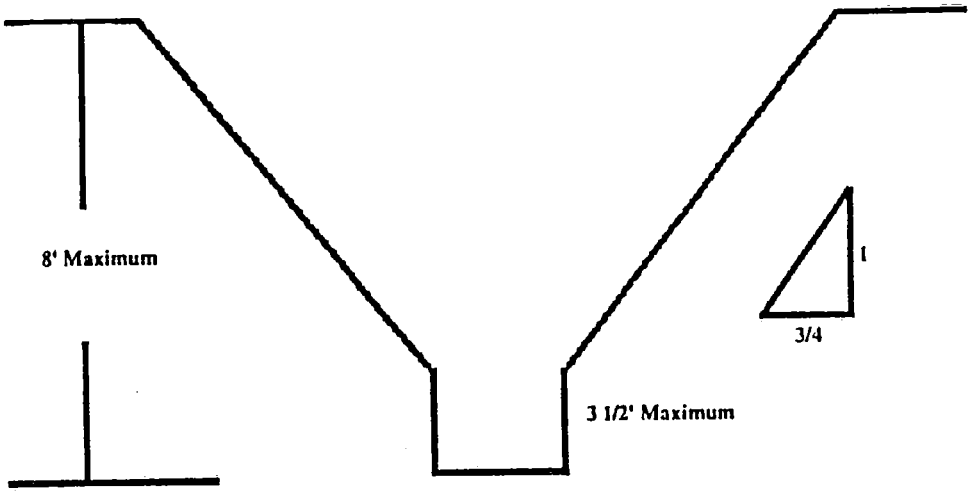
Simple Slope - General

Simple slope excavation 20 feet or less in depth shall have a maximum allowable slope of 3/4:1

WAC 296-155-657 (Continued)

Figure A-2

Slope Configuration for *Type A* Soil

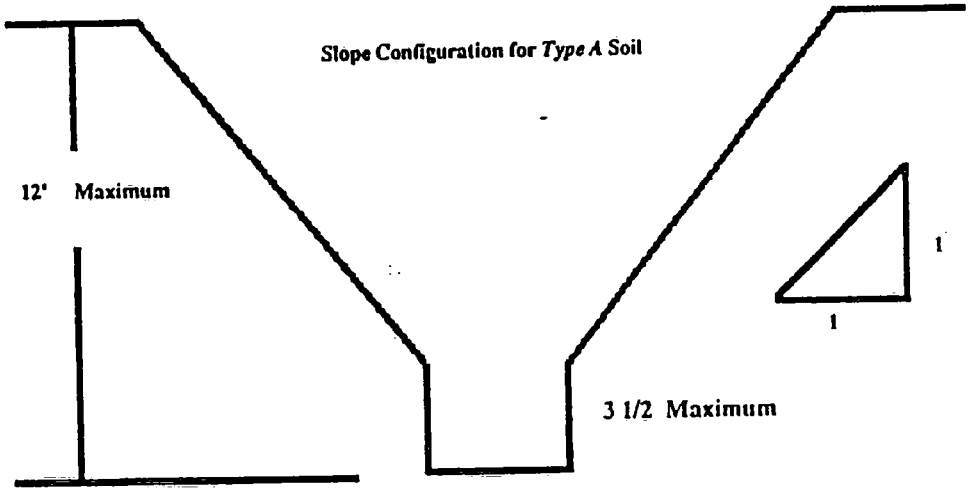


Unsupported Vertically Sided Lower Portion -- Maximum 8 Feet in Depth

4. All excavations 8 feet or less in depth which have unsupported vertically sided lower portions shall have a maximum vertical side of 3 1/2 feet.

Figure A-3

Slope Configuration for *Type A* Soil

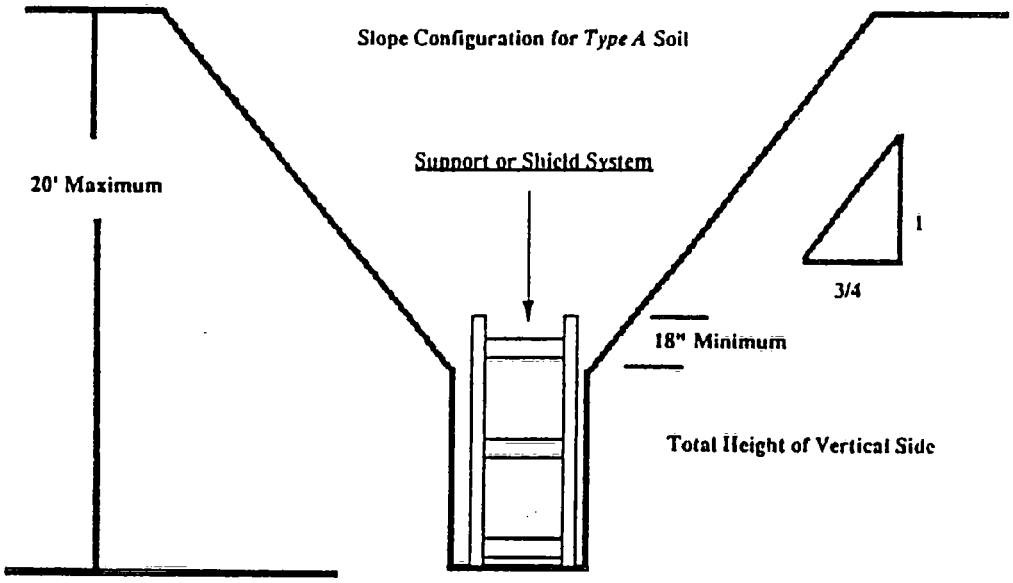


Unsupported Vertically Sided Lower Portion--Maximum 12 Feet in Depth

5. All excavations more than 8 feet but not more than 12 feet in depth with unsupported vertically sided lower portions shall have a maximum allowable slope of 1:1 and a maximum vertical side of 3 1/2 feet.

WAC 296-155-657 (Continued)

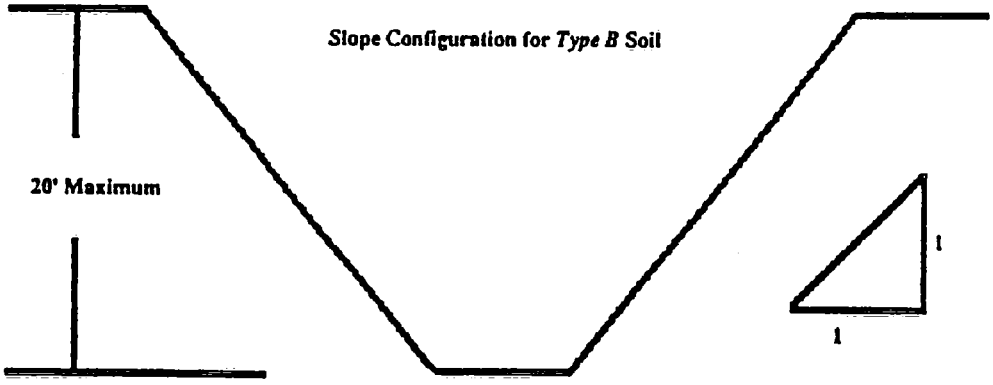
Figure A-4



Supported or Shielded Vertically Sided Lower Portion

Excavations 20 feet or less in depth which have vertically sided lower portions that are supported or shielded shall have a maximum allowable slope of 3/4:1. The support or shield system must extend at least 18 inches above the top of the vertical side.

Figure B-1

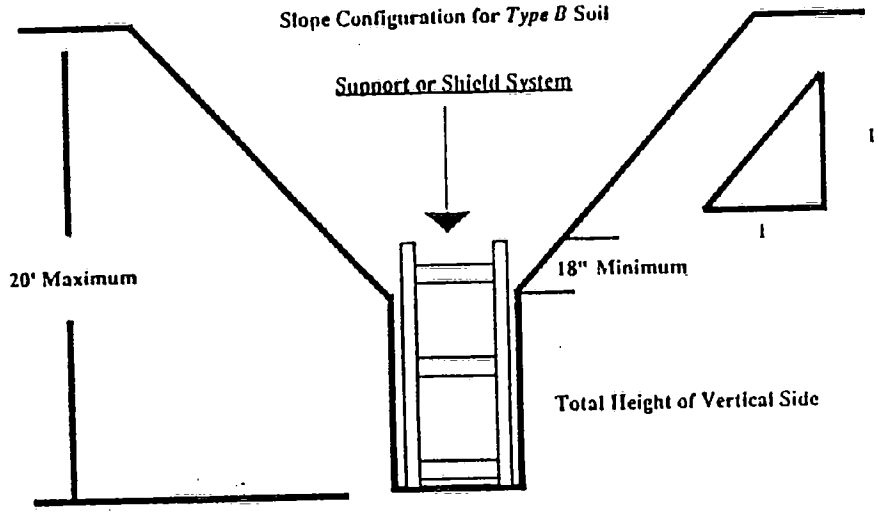


Simple Slope

1. **All simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1:1.**

WAC 296-155-657 (Continued)

Figure B-2

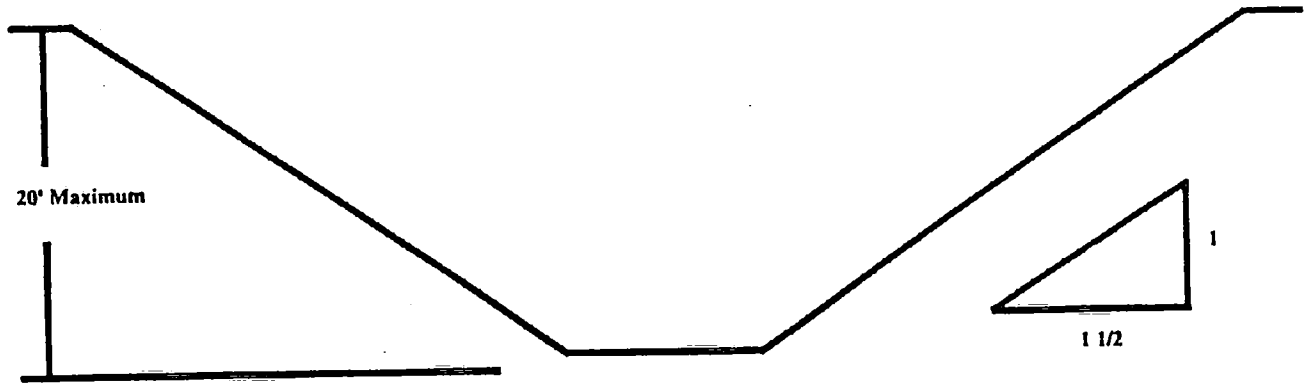


Vertically Sided Lower Portion

Excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1:1.

Figure C-1

Slope Configuration for *Type C* Soil

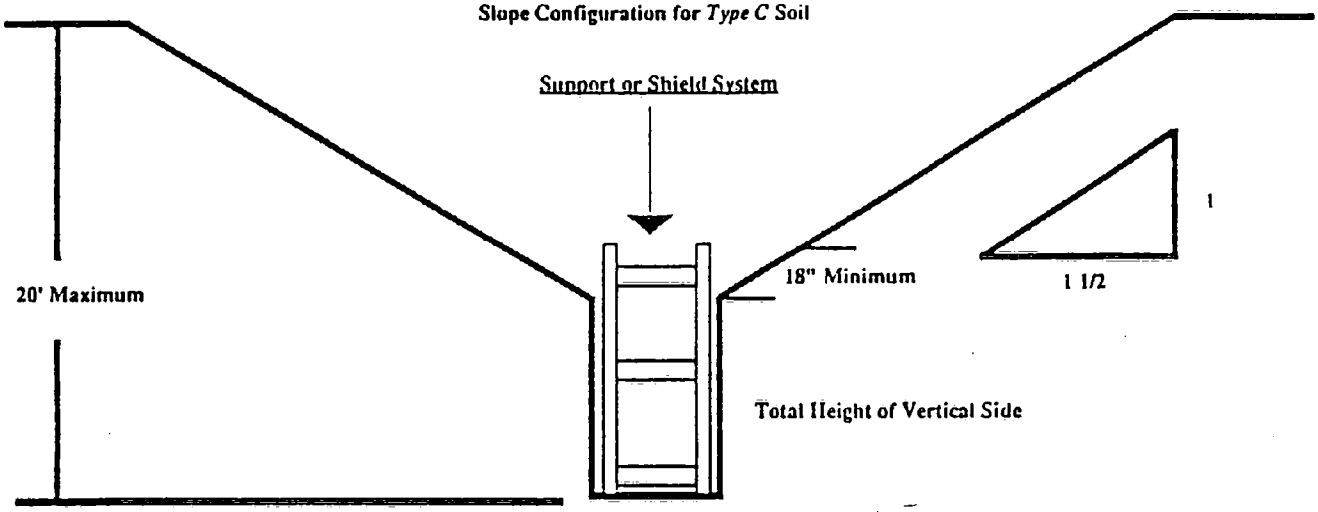


Simple Slope

1. **Simple slope excavations 20 feet or less in depth shall have a maximum allowable slope of 1 1/2:1.**

WAC 296-155-657 (Continued)

Figure C-2



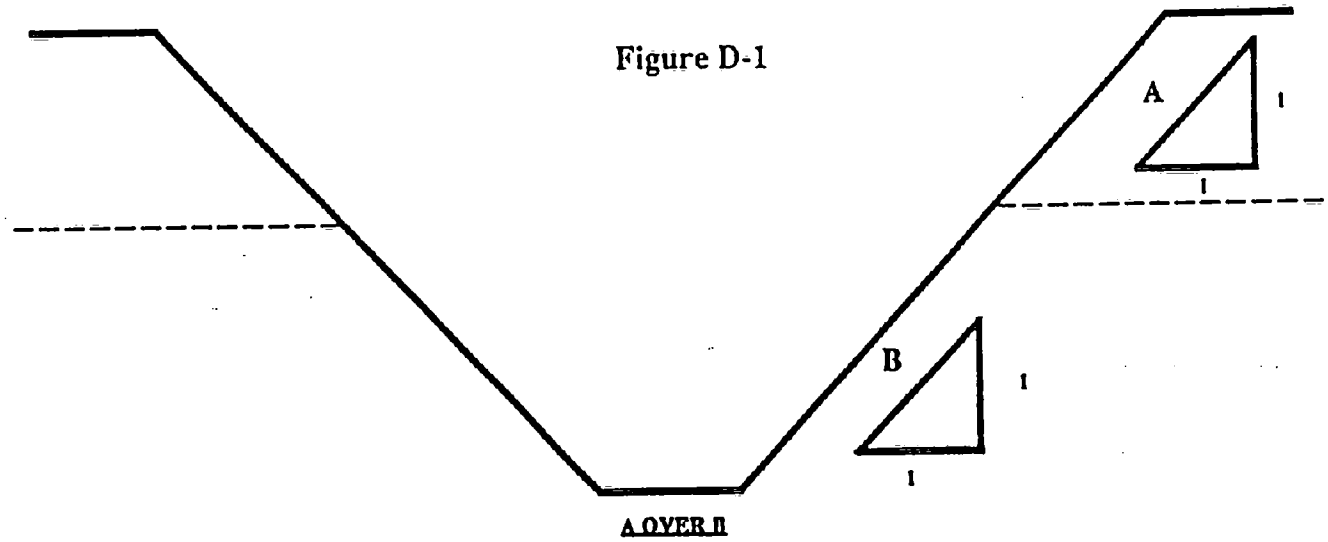
Vertically Sided Lower Portion

2. Excavations 20 feet or less in depth which have vertically sided lower portions shall be shielded or supported to a height at least 18 inches above the top of the vertical side. All such excavations shall have a maximum allowable slope of 1 1/2:1.

EXCAVATIONS MADE IN LAYERED SOILS

Excavations 20 feet or less in depth made in layered soils shall have a maximum allowable slope for each layer as set forth below:

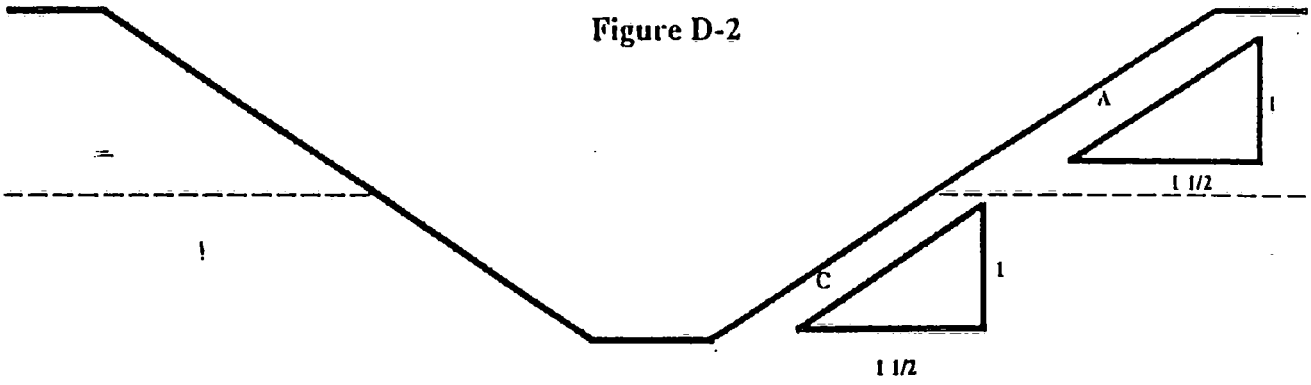
Figure D-1



A OVER B

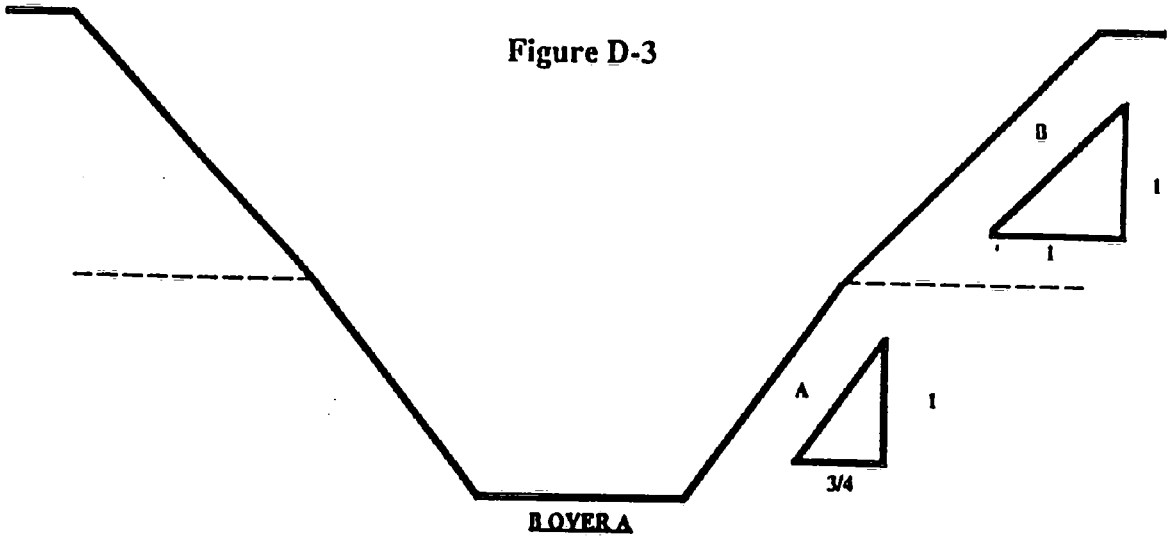
WAC 296-155-657 (Continued)

Figure D-2



A OVER C

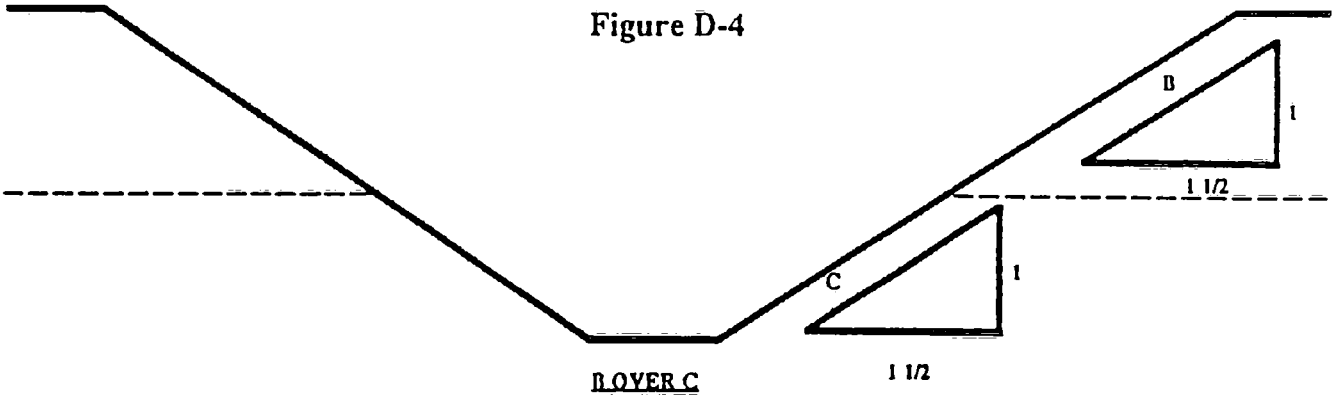
Figure D-3



B OVER A

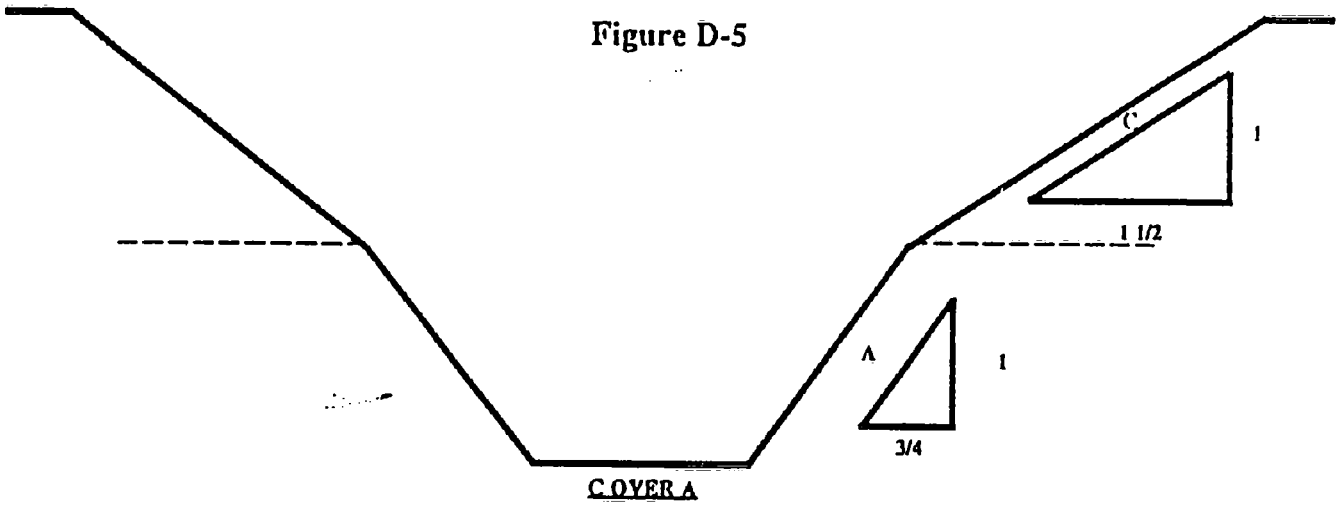
WAC 296-155-657 (Continued)

Figure D-4



B OVER C

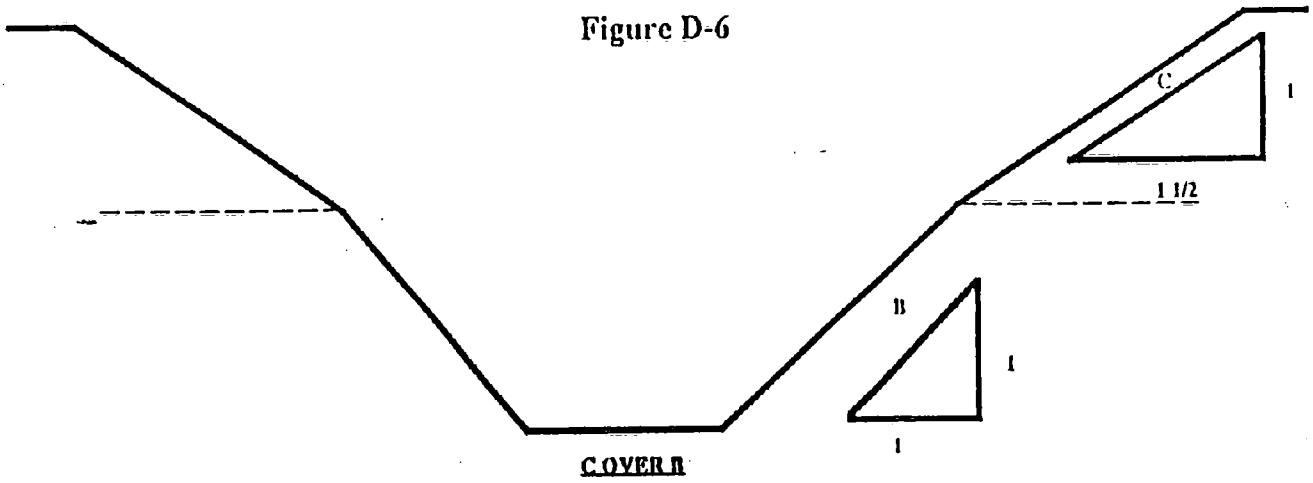
Figure D-5



C OVER A

WAC 296-155-657 (Continued)

Figure D-6



[Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-155-657, filed 1/10/91, effective 2/12/91]

WAC 296-155-66103, Timber Shoring for Trenches.

(1) Scope and application. This section shall be used when designing a timber shoring protective system. Shoring systems for use in situations that are not covered by this section shall be designed as specified in other sections of this part.

(2) Soil and rock deposits shall be classified according to WAC 296-166-664, Appendix A.

(3) Design of support systems. Support systems, shield systems, and other protective systems shall be selected and constructed by the employer or his designee.

(4) The support system shall extend to the bottom of the trench or excavation. The system shall be designed to resist the forces calculated for the full depth of the trench.

(5) Installation of a support system shall be closely coordinated with the excavation of trenches.

(6) When voids form in the sides or face of the trench, after placement of shoring or bracing, they shall be promptly filled with compacted material and blocking. Voids are filled to uniformly distribute the load onto the shoring or bracing.

(7) When any of the following conditions are present, the members specified in the tables are not considered adequate. Either an alternate timber shoring system must be designed or another type of protective system designed in accordance with WAC 296-155-66109.

(a) When loads imposed by structures or by stored material adjacent to the trench weigh in excess of the load imposed by a two-foot soil surcharge. (The term "adjacent" as used here means the within a horizontal distance from the edge of the trench equal to the depth of the trench.)

(b) When vertical loads imposed on crossbraces exceed a 240-pound gravity load distributed on a one-foot section of the center of the crossbrace.

(c) When surcharge loads are present from equipment weighing more then 20,000 pounds.

(d) When only the lower portion of a trench is shored and the upper portion of the trench is sloped unless:

(i) The sloped portion shall be at an angle of at least 3 horizontal to 1 vertical; or

(ii) The shoring members shall be selected from the tables-for the total depth of the trench.

(8) Protective systems.

(a) The timber trench shoring system used in trenches or excavations shall be according to tables 1 through 3.

(b) When conditions are saturated or submerged tight sheeting shall be used.

(c) All spacing shall be measured center to center.

(d) Wales shall be installed with greater dimension horizontal.

(e) Trench jacks may be used instead of, or in combination with timber crossbraces.

WAC 296-155-66103 (Continued)

(f) Placement of crossbraces. When the vertical spacing of crossbraces is 4 feet, place the top crossbrace no more than 2 feet below the top of the trench. When the vertical spacing of crossbraces is 5 feet, place the top crossbrace no more than 2.5 feet below the top of the trench.

(9) Plywood used shall be 1.125 inch thick softwood or 0.75 inch thick, 14 ply, arctic white birch (Finland form). Plywood is not intended as a structural member, but only for preservation of local raveling (sloughing of the trench face) between shores.

TABLE 1

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS*

SOIL *TYPE A* $P_a = 25 X H + 72$ psf (2 ft. Surcharge)

DEPTH OF TRENCH (FEET)	NOMINAL SIZE AND SPACING OF MEMBERS**												
	CROSS BRACES						WALES		UPRIGHTS				
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)				VERT. SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)				
		Up To 4	Up To 6	Up To 9	Up To 12	Up To 15			CLOSE	4	5	6	8
4 TO 10	Up to 6	4X4	4X4	4X4	4X4	4X6	4	Not Required	Not Required				4X6	
	Up to 8	4X4	4X4	4X4	4X6	4X6	4	Not Required	Not Required					4X6
	Up to 10	4X6	4X6	4X6	6X6	6X6	4	8X8	4			4X6		
	Up to 12	4X6	4X6	4X6	6X6	6X6	4	8X8	4				4X6	
10 TO 15	Up to 6	4X4	4X4	4X4	6X6	6X6	4	Not Required	Not Required				4X10	
	Up to 8	4X6	4X6	4X6	6X6	6X6	4	6X8	4		4X6			
	Up to 10	6X6	6X6	6X6	6X6	6X6	4	8X8	4			4X8		
	Up to 12	6X6	6X6	6X6	6X6	6X6	4	8X10	4		4X6		4X10	
15 TO 20	Up to 6	6X6	6X6	6X6	6X6	6X6	4	6X8	4	3X6				
	Up to 8	6X6	6X6	6X6	4X6	6X6	4	8X8	4	3X6	4X12			
	Up to 10	6X6	6X6	6X6	6X6	6X8	4	8X10	4	3X6				
	Up to 12	6X6	6X6	6X6	6X8	6X8	4	8X12	4	3X6	4X12			
OVER 20	Protective systems for trenches over 20 feet shall be designed by a registered professional engineer. See WAC 296-155-655(1)												

* Douglas Fir or Equivalent with a Bending Strength not less than 1500 psi.
** Manufactured Members of Equivalent Strength may be Substituted for Wood.

WAC 296-155-66103 (Continued)

TABLE 2

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS*

SOIL *TYPE B* $P_a = 45 \times H + 72$ psf (2 ft. Surcharge)

DEPTH OF TRENCH (FEET)	NOMINAL SIZE AND SPACING OF MEMBERS**												
	CROSS BRACES						WALES		UPRIGHTS				
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)				VERT. SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)				
		Up To 4	Up To 6	Up To 9	Up To 12	Up To 15			CLOSE	1	3	4	6
4 TO 10	Up to 6	4X6	4X6	4X6	6X6	6X6	5	4X8	5			3X12 1X8		6X12
	Up to 8	4X6	4X6	6X6	6X6	6X6	5	6X8	5		3X8		6X8	
	Up to 10	4X6	4X6	6X6	6X6	6X8	5	8X10	5			6X8		
	See Note 1													
10 TO 15	Up to 6	4X6	4X6	6X6	6X8	6X8	5	6X8	5	3X6	6X10			
	Up to 8	4X6	4X8	6X8	8X8	8X8	5	10X10	5	3X6	6X10			
	Up to 10	6X6	6X8	6X8	8X8	8X8	5	10X12	5	3X6	6X10			
	See Note 1													
15 TO 20	Up to 6	6X8	6X8	6X8	6X8	6X8	5	8X10	5	6X6				
	Up to 8	6X8	6X8	6X8	8X8	8X8	5	10X12	5	6X6				
	Up to 10	8X8	8X8	8X8	8X8	8X8	5	12X12	5	6X6				
	See Note 1													
OVER 20	Protective systems for trenches over 20 feet shall be designed by a registered professional engineer. See WAC 296-155-655(1)												

* Douglas Fir or Equivalent with a Bending Strength not less than 1500 psi.
** Manufactured Members of Equivalent Strength may be Substituted for Wood.

TABLE 3

TIMBER TRENCH SHORING -- MINIMUM TIMBER REQUIREMENTS*

SOIL *TYPE C* $P_a = 80 \times H + 72$ psf (2 ft. Surcharge)

DEPTH OF TRENCH (FEET)	NOMINAL SIZE AND SPACING OF MEMBERS**												
	CROSS BRACES						WALES		UPRIGHTS				
	HORIZ. SPACING (FEET)	WIDTH OF TRENCH (FEET)				VERT. SPACING (FEET)	SIZE (IN)	VERT. SPACING (FEET)	MAXIMUM ALLOWABLE HORIZONTAL SPACING (FEET)				
		Up To 4	Up To 6	Up To 9	Up To 12	Up To 15			CLOSE	1	3		
4 TO 10	Up to 6	4X6	4X6	4X6	6X6	6X8	5	6X8	5	3X6			
	Up to 8	4X6	4X6	6X6	8X8	8X8	5	10X10	5	3X6			
	Up to 10	4X6	4X6	8X8	8X8	8X8	5	10X12	5	3X6			
	See Note 1												
10 TO 15	Up to 6	4X8	6X8	6X8	8X8	8X8	5	10X10	5	6X6			
	Up to 8	6X8	8X8	8X8	8X8	8X8	5	12X12	5	6X6			
	See Note 1												
	See Note 2												
15 TO 20	Up to 6	6X8	8X8	8X8	8X10	6X10	5	10X12	5	6X6			
	See Note 1												
	See Note 2												
	See Note 3												
OVER 20	Protective systems for trenches over 20 feet shall be designed by a registered professional engineer. See WAC 296-155-655(1)												

* Douglas Fir or Equivalent with a Bending Strength not less than 1500 psi.
** Manufactured Members of Equivalent Strength may be Substituted for Wood.

[Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-155-66103, filed 1/10/91, effective 2/12/91]

WAC 296-155-66105, Aluminum Hydraulic Shoring for Trenches.

(1) Scope. This section shall be used for the design of an aluminum hydraulic protective system when the trench does not exceed 20 feet in depth.

(2) Soil and rock deposits shall be classified according to WAC 296-155-664 Appendix A.

(3) Tables D-1 through D-4 shall be used for an aluminum hydraulic shoring system.

(a) All spacing indicated shall be measured center to center.

(b) Vertical shoring rails shall have a minimum section modulus of 0.40 inch.

(c) When vertical shores are used, there must be a minimum of 3 shores spaced equally, horizontally, in a group.

(d) Plywood shall be 1.125 inch thick softwood or 0.75 inch thick, 14 ply, arctic white birch (Finland form). Plywood is not intended as a structural member, only for prevention of local raveling (sloughing of the trench face) between shores.

(4) When any of the following conditions are present, the members specified in the tables are not considered adequate. Here the aluminum hydraulic shoring system or other type of protective system shall be designed using manufacturer's data or designed according to WAC 296-155-66109.

(a) When vertical loads imposed on crossbraces exceed a 100-pound gravity load distributed on a one-foot section of the center of the hydraulic cylinder.

(b) When surcharge loads are present from equipment weighing more than 20,000 pounds.

(c) When only the lower portion of a trench is shored and the upper portion of the trench is sloped unless:

(i) The sloped portion shall be at an angle of at least 3 horizontal to 1 vertical; or

(ii) The shoring members shall be selected from the tables for the total depth of the trench.

(5) Hydraulic cylinders capacities.

(a) Two-inch cylinders shall be a minimum 2-inch inside diameter with a safe working capacity of not less than 18,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(b) Three-inch cylinders shall be a minimum 3-inch inside diameter with a safe work capacity of not less than 30,000 pounds axial compressive load at maximum extension. Maximum extension is to include full range of cylinder extensions as recommended by product manufacturer.

(6) Shield systems.

(a) Shield systems shall be designed by a registered professional engineer.

(b) Shield systems shall be designed to resist the forces calculated for the full depth of the trench.

(c) Plans and calculations prepared by the registered professional engineer shall be made available at the work site to the director or authorized representative.

WAC 296-155-66105 (Continued)

(d) The employer shall establish a permanent means of identifying the shield system.

(e) Shield systems shall not be subjected to loads exceeding those the system is designed to withstand.

(f) Shields shall be installed to restrict lateral or other hazardous movements if sudden lateral loads are applied.

(g) Employees shall be protected from the hazard of cave-ins when entering or exiting the areas protected by shields.

(h) Employees shall not be allowed in shields when shields are being installed, removed, or moved vertically.

(i) Shields shall extend to the bottom of the trench.

TABLE D - 1
ALUMINUM HYDRAULIC SHORING
VERTICAL SHORES
FOR SOIL *TYPE A*

Depth of Trench (Feet)	Hydraulic Cylinders				
	Maximum Horizontal Spacing (Feet)	Maximum Vertical Spacing (Feet)	Width of Trench (Feet)		
			Up to 8	Over 8 Up to 12	Over 12 Up to 15
Over 4 Up to 10	8	4	2 INCH DIAMETER	2 INCH DIAMETER See NOTE (1)	3 INCH DIAMETER
Over 10 Up to 15	8				
Over 15 Up to 20	7				
Over 20	Protective systems for trenches over 20 feet shall be designed by a registered professional engineer. See WAC 296-155-655(1)				

NOTE (1): 2 inch diameter cylinders, at this width, shall have structural steel tube (3.5 X 3.5 X 0.1875) oversleeves, or structural oversleeves of manufacturer's specification, extending the full, collapsed length.

WAC 296-155-66105 (Continued)

TABLE D - 2
ALUMINUM HYDRAULIC SHORING
VERTICAL SHORES
FOR SOIL *TYPE B*

Depth of Trench (Feet)	Maximum Horizontal Spacing (Feet)	Maximum Vertical Spacing (Feet)	Hydraulic Cylinders Width of Trench (Feet)		
			Up to 8	Over 8 Up to 12	Over 12 Up to 15
Over 4 Up to 10	8	4	2 INCH DIAMETER	2 INCH DIAMETER See NOTE (1)	3 INCH DIAMETER
Over 10 Up to 15	6.5				
Over 15 Up to 20	5.5				
Over 20	Protective systems for trenches over 20 feet shall be designed by a registered professional engineer. See WAC 296-155-655(1)				

NOTE (1): 2 inch diameter cylinders, at this width, shall have structural steel tube (3.5 X 3.5 X 0.1875) oversleeves, or structural oversleeves of manufacturer's specification, extending the full, collapsed length.

WAC 296-155-66105 (Continued)

TABLE D - 3
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL *TYPE B*

Depth of Trench (Feet)	Waler Vertical Spacing (Feet)	Waler Section* Modulus (in^3)	Horizontal Cylinders Width of Trench (Feet) Up to 8 Horiz. Spacing	Up to 8 Cylinder Diameter	Over 8 - Up to 12 Horiz. Spacing	Over 8 - Up to 12 Cylinder Diameter	Over 12 - Up to 15 Horiz. Spacing	Over 12 - Up to 15 Cylinder Diameter	Timber Uprights Max. Horizontal Spacing for Cases: Solid Sheet	2 Feet	3 Feet
Over 4 Up to 10	4	3.5	8.0	2 IN	8.0	2 IN	8.0	3 IN	—	—	3 X 12
		7.0	7.0	2 IN	9.0	2 IN	9.0	3 IN			
		14.0	12.0	3 IN	12.0	3 IN	12.0	3 IN			
Over 10 Up to 15	4	3.5	6.0	2 IN	6.0	2 IN	6.0	3 IN	—	3 X 12	—
		7.0	8.0	3 IN	8.0	3 IN	8.0	3 IN			
		14.0	10.0	3 IN	10.0	3 IN	10.0	3 IN			
Over 15 Up to 20	4	3.5	5.5	2 IN	5.5	2 IN	5.5	3 IN	3 X 12	—	—
		7.0	6.0	3 IN	6.0	3 IN	6.0	3 IN			
		14.0	9.0	3 IN	9.0	3 IN	9.0	3 IN			
Over 20	Protective systems for trenches over 20 feet shall be designed by a registered professional engineer. See WAC 296-155-655(1)										

NOTE (1): 2 inch diameter cylinders, at this width, shall have structural steel tube (3.5 X 3.5 X 0.1875) oversleeves, or structural oversleeves of manufacturer's specification, extending the full, collapsed length.
*Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

TABLE D - 4
ALUMINUM HYDRAULIC SHORING
WALER SYSTEMS
FOR SOIL *TYPE C*

Depth of Trench (Feet)	Waler Vertical Spacing (Feet)	Waler Section* Modulus (in^3)	Horizontal Cylinders Width of Trench (Feet) Up to 8 Horiz. Spacing	Up to 8 Cylinder Diameter	Over 8 - Up to 12 Horiz. Spacing	Over 8 - Up to 12 Cylinder Diameter	Over 12 - Up to 15 Horiz. Spacing	Over 12 - Up to 15 Cylinder Diameter	Timber Uprights Max. Horizontal Spacing for Cases: Solid Sheet	2 Feet	3 Feet
Over 4 Up to 10	4	3.5	6.0	2 IN	6.0	2 IN	6.0	3 IN	3 X 12	—	—
		7.0	6.5	2 IN	6.5	2 IN	6.5	3 IN			
		14.0	10.0	3 IN	10.0	3 IN	10.0	3 IN			
Over 10 Up to 15	4	3.5	4.0	2 IN	4.0	2 IN	4.0	3 IN	3 X 12	—	—
		7.0	5.5	3 IN	5.5	3 IN	5.5	3 IN			
		14.0	8.0	3 IN	8.0	3 IN	8.0	3 IN			
Over 15 Up to 20	4	3.5	3.5	2 IN	3.5	2 IN	3.5	3 IN	3 X 12	—	—
		7.0	5.0	3 IN	5.0	3 IN	5.0	3 IN			
		14.0	6.0	3 IN	6.0	3 IN	6.0	3 IN			
Over 20	Protective systems for trenches over 20 feet shall be designed by a registered professional engineer. See WAC 296-155-655(1)										

NOTE (1): 2 inch diameter cylinders, at this width, shall have structural steel tube (3.5 X 3.5 X 0.1875) oversleeves, or structural oversleeves of manufacturer's specification, extending the full, collapsed length.
*Consult product manufacturer and/or qualified engineer for Section Modulus of available wales.

[Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-155-66105, filed 1/10/91, effective 2/12/91]

WAC 296-155-66109, Approval or Design by a Registered Professional Engineer.

(1) Sloping systems, support systems, shield systems, or other protective systems not meeting the requirements of this part shall be approved by a registered professional engineer. Approval or designs shall be in written form and shall include the following:

(a) The magnitude of the slopes that were determined to be safe for the particular project and the configurations that were determined to be safe for the project; or a plan indicating the sizes, types, and configurations of the materials to be used in the protective system.

(b) The identity of the registered professional engineer approving the designs.

(c) A copy of the approval or design shall be maintained at the work site and made available to the director or the authorized representative of the director upon request.

(2) Excavations not meeting the requirement of this part which are approved by a registered professional engineer shall be monitored as follows:

(a) The registered professional engineer shall inspect the work site at the beginning of each shift, after any change in weather conditions, and after any change in the circumstances of adjacent property.

(b) The registered professional engineer shall make a written report of each inspection, the report shall be kept on file at the work site, and the report shall be made available to the director or the authorized representative of the director upon request.

(c) All recommendations of the registered professional engineer regarding the excavation and soil conditions shall be followed. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-155-66109, filed 1/10/91, effective 2/12/91]

WAC 296-155-664, Appendix A--Soil Classification.

(1) Scope and application--Scope. This appendix describes a method of classifying soil and rock deposits based on site and environmental conditions, and on the structure and composition of the earth deposits. The appendix contains definitions, sets forth requirements, and describes acceptable visual and manual tests for use in classifying soils.

(2) This appendix applies when constructing or using a protective system according to the requirements set forth in this part.

(3) Definitions. The definitions and examples below are based on the American Society for Testing Materials (ASTM) Standards D653-85 and D2488: The Unified Soils Classification System, U.S. Department of Agriculture (USDA) Textural Classification Scheme, and The National Bureau of Standards Report BSS-121.

(a) Cemented soil. A soil where the particles are held together by a chemical agent, such as calcium carbonate. A hand-size sample cannot be crushed into powder or individual soil particles by finger pressure.

(b) Cohesive soil. Dry clay (fine grained soil), or soil with a high clay content, which has cohesive strength. Cohesive soil does not crumble, can be excavated with vertical sideslopes, and is plastic when moist. Cohesive soil is hard to break up when dry, and exhibits significant cohesion when submerged. Cohesive soils include clayey silt, sandy clay, clay and organic clay.

WAC 296-155-664 (Continued)

(c) Dry soil. Soil that does not exhibit visible signs of moisture content.

(d) Fissured. A soil material that tends to break along definite planes of fracture with little resistance, or a material that exhibits open cracks, such as tension cracks, in an exposed surface.

(e) Granular soil. Gravel, sand, or silt, (coarse grained soil) with little or no clay content. Granular soil lacks no cohesive strength. Some moist granular soils exhibit apparent cohesion. Granular soil cannot be molded when moist and crumbles easily when dry.

(f) Layered system. Two or more distinctly different soil or rock types arranged in layers. Micaceous seams or weakened planes in rock or shale are considered layered.

(g) Moist soil. A condition in which a soil looks and feels damp. Moist cohesive soil can easily be shaped into a ball and rolled into small diameter threads before crumbling. Moist granular soil that contains some cohesive material will exhibit signs of cohesion between particles.

(h) Plastic. A property of a soil that allows the soil to be deformed or molded without cracking, or appreciable volume change.

(i) Saturated soil. A soil in which the voids are filled with water. Saturation does not require flow. Saturation, or near saturation, is necessary for the proper use of instruments such as a pocket penetrometer or sheer vane.

(j) Soil classification system. This section categorizes rock and soil into stable rock, type A, B, and C soils, in decreasing order of stability. Categories are based on properties analysis, performance characteristics, and environmental conditions.

(k) Stable rock. Natural solid mineral matter that can be excavated with vertical sides and remain intact while exposed.

(l) Submerged soil. Soil which is underwater or is free seeping.

(m) Type A. Cohesive soils with an unconfined compressive strength of 1.5 ton per square foot (tfs) or greater. Examples of cohesive soils are clay, silty clay, sandy clay, clay loam and, sometimes, silty clay loam and sandy clay loam. Cemented soils such as caliche and hardpan are also considered Type A. No soil is Type A if:

(i) The soil is fissured; or

(ii) The soil is subject to vibration from heavy traffic, pile driving, or similar effects; or

(iii) The soil has been previously disturbed; or

(iv) The soil is part of a sloped, layered system where the layers dip into the excavation on a slope of 4 horizontal to 1 vertical (4H.1V) or greater; or

(v) The material is subject to other factors that would require it to be classified as a less stable material.

WAC 296-155-664 (Continued)

(n) Type B.

(i) Cohesive soil with an unconfined compressive strength greater than 0.5 tsf. but less than 1.5 tfs: or

(ii) Granular cohesionless soils including angular gravel (similar to crushed rock), silt, silt loam, sand loan and, sometimes, silty clay loam and sandy clay loam.

(iii) Previously disturbed soils except those that would otherwise be classified as Type C soil.

(iv) Soil that meets the unconfined compressive strength or cementation requirements for Type A, but is fissured or subject to vibration: or

(v) Dry rock that is not stable: or

(vi) A sloped, layered system where the layers dip into the excavation on a slope less than 4 horizontal to 1 vertical (4H.1V), but only if the material would otherwise be classified as Type B.

(o) Type C.

(i) Cohesive soils with an unconfined compressive strength of 0.5 tsf or less; or

(ii) Granular soils including gravel, sand, and loamy sand: or

(iii) Submerged soil or soil from which water is freely seeping: or

(iv) Submerged rock that is not stable, or

(v) Material in a sloped, layered system where the layers dip into the excavation or a slope of 4 horizontal to 1 vertical (4H.1V) or steeper.

(p) Unconfined compressive strength. The load per unit area at which a soil will fail in compression. It can be determined by laboratory testing, or estimated in the field using a pocket penetrometer, by thumb penetration tests, and other methods.

(q) Wet soil. Soil that contains significantly more moisture than moist soil, but in such a range of values that cohesive material will slump or begin to flow when vibrated. Granular material that would exhibit cohesive properties when moist will lose those cohesive properties when wet.

(4) Requirements--Classification of soil and rock deposits.

(a) Each soil and rock deposit shall be classified by a competent person as Stable Rock, Type A, B, or C according to the definitions set forth in subsection (3) of this appendix.

(b) Basis of classification. The classification of the deposits shall be made based on the results of at least one visual and at least one manual analysis. Such analyses shall be conducted by a competent person using tests in subsection (5) or in other recognized methods of soil classification and testing such as those adopted by the American Society for Testing Materials, or the U.S. Department of Agriculture textural classification system.

WAC 296-155-664 (Continued)

(c) Visual and manual analyses. The visual and manual analyses, such as noted is subsection (5) of this appendix, shall be designed and conducted to provide quantitative and qualitative information necessary to identify properly the properties, factors, and conditions affecting the classification of deposits.

(d) Layered systems. In a layered system, the system shall be classified according to its weakest layer. Each layer may be classified individually where a more stable layer lies under a less stable layer.

(e) Reclassification. If, after classifying a deposit, the properties, factors, or conditions affecting its classification change in any way, the changes shall be evaluated by a competent person. The deposit shall be reclassified as necessary to reflect the changed circumstances.

(5) Acceptable visual and manual tests.

(a) Visual tests. Visual analysis is conducted to determine qualitative information regarding the excavation site soil next to the excavation, soil at the sides of the excavation, and the soil taken as samples from excavated material.

(i) Observe samples of soil that are excavated and soil in the sides of the excavation. Estimate the range of particle sizes and the relative amounts of the particle sizes. Soil that is primarily composed of fine-grained material is cohesive material. Soil composed primarily of course-grained sand or gravel is granular material.

(ii) Observe soil as it is excavated. Soil that remains in clumps when excavated is cohesive. Soil that breaks up easily and does not stay in clumps is granular.

(iii) Observe the side of the opened excavation and the surface area by the excavation. Crack-like openings such as tension cracks could suggest fissured material. If chunks of soil spall off a vertical side, the soil could be fissured. Small spalls are evidence of moving ground and are indications of potentially hazardous situations.

(iv) Observe the area by the excavation and the excavation itself for evidence of existing utility and other underground structures, and to identify previously disturbed soil.

(v) Observe the opened side of the excavation to identify layered systems. Examine layered systems to identify if the layers slope toward the excavation. Estimate the degree of slope of the layers.

(vi) Observe the excavation and sides of the excavation for evidence of surface water, water seeping from the sides of the excavation, or the level of the water table.

(vii) Observe the area by the excavation and the area within the excavation for sources of vibration that may affect the stability of the excavation face.

WAC 296-155-664 (Continued)

(b) Manual tests. Manual analysis of soil samples is conducted to find quantitative, also, qualitative properties of soil and to provide more information in order to classify soil properly.

(i) Plasticity. Mold a moist or wet sample of soil into a ball and attempt rolling it into threads as thin as 1/8-inch in diameter. Cohesive material can be successfully rolled into threads without crumbling. For example, if at least a 2 inch length of 1/8-inch thread can be held on one end without tearing, the soil is cohesive.

(ii) Dry strength. If the soil is dry and crumbles on its own or with moderate pressure into grains or fine powder, it is granular (any combination of gravel, sand, or silt). If the soil is dry, falls into clumps that break into smaller clumps, and those clumps are broken with difficulty, it may be clay with gravel, sand or silt. If dry soil clumps are broken with difficulty into smaller clumps, and there is no indication the soil is fissured, it maybe considered unfissured.

(iii) Thumb penetration. The thumb penetration test can be used to estimate the unconfined compressive strength of cohesive soils. (This test is based on the thumb penetration test described in American Society for Testing and Materials (ASTM) Standard designation D2488-"Standard Recommended Practice for Description of Soils (Visual--Manual Procedure).") Type A soils with an unconfined compressive strength of 1.5 tsf can be readily indented by the thumb and penetrated by the thumb with great effort. Type C soils with an unconfined compressive strength of 0.5 tsf can be easily penetrated several inches by the thumb, and can be molded by light finger pressure. This test should be conducted on an undisturbed soil sample, such as a large clump of spoil, soon after excavation to keep drying effects to a minimum. If the excavation is later exposed to wetting (rain, flooding), the classification of the soil must be changed accordingly.

(iv) Other strength tests. Estimates of unconfined compressive strength of soils also can be obtained by use of a pocket penetrometer or by using a hand-operated shear vane.

(v) Drying test. The basic purpose of the drying test is to differentiate between cohesive material with fissures, unfissured cohesive material, and granular material. The procedure for the drying test involves drying a sample of soil that is approximately 1 inch thick and 6 inches in diameter until it is thoroughly dry:

(A) If the sample develops cracks as it dries, significant fissures are indicated.

(B) Samples that dry without cracking are to be broken by hand. If considerable force is necessary to break a sample, the soil has significant cohesive material content. The soil can be classified as a unfissured cohesive material and the unconfined compressive strength should be determined.

(C) If a sample breaks easily by hand, it is wither a fissured cohesive material or a granular material. To distinguish between the two, pulverize the dried clumps of the sample by hand or by stepping on them. If the clumps do not pulverize easily, the material is cohesive with fissures. If they pulverize easily into very small fragments, the material is granular. [Statutory Authority: Chapter 49.17 RCW. 91-03-044 (Order 90-18), § 296-155-664, filed 1/10/91, effective 2/12/91]

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EMERGENCY FACILITIES AND NUMBERS

HOSPITAL: - Holy Family Hospital, N. 5633 Lidgerwood Street, Spokane, WA 99207
Emergency: (509) 482-2460
Information: (509) 482-0111 .

DIRECTIONS - Drive to Highway 2 (Highway 2 runs north and south between the Little Spokane River and Chattaroy Road). Drive south on Highway 2 toward Spokane and follow through town (turns into Division Street). Get in the far left lane. Turn left at Central Avenue (at Perkins Restaurant). Drive one block and take a right on Lidgerwood Street. Follow signs to the emergency entrance. See map (Figure 1) on next page for emergency route.

TELEPHONE - A telephone will be located onsite in the project office trailer.

EMERGENCY TRANSPORTATION SYSTEMS (Fire, Police, Ambulance) - 911

EMERGENCY CONTACTS

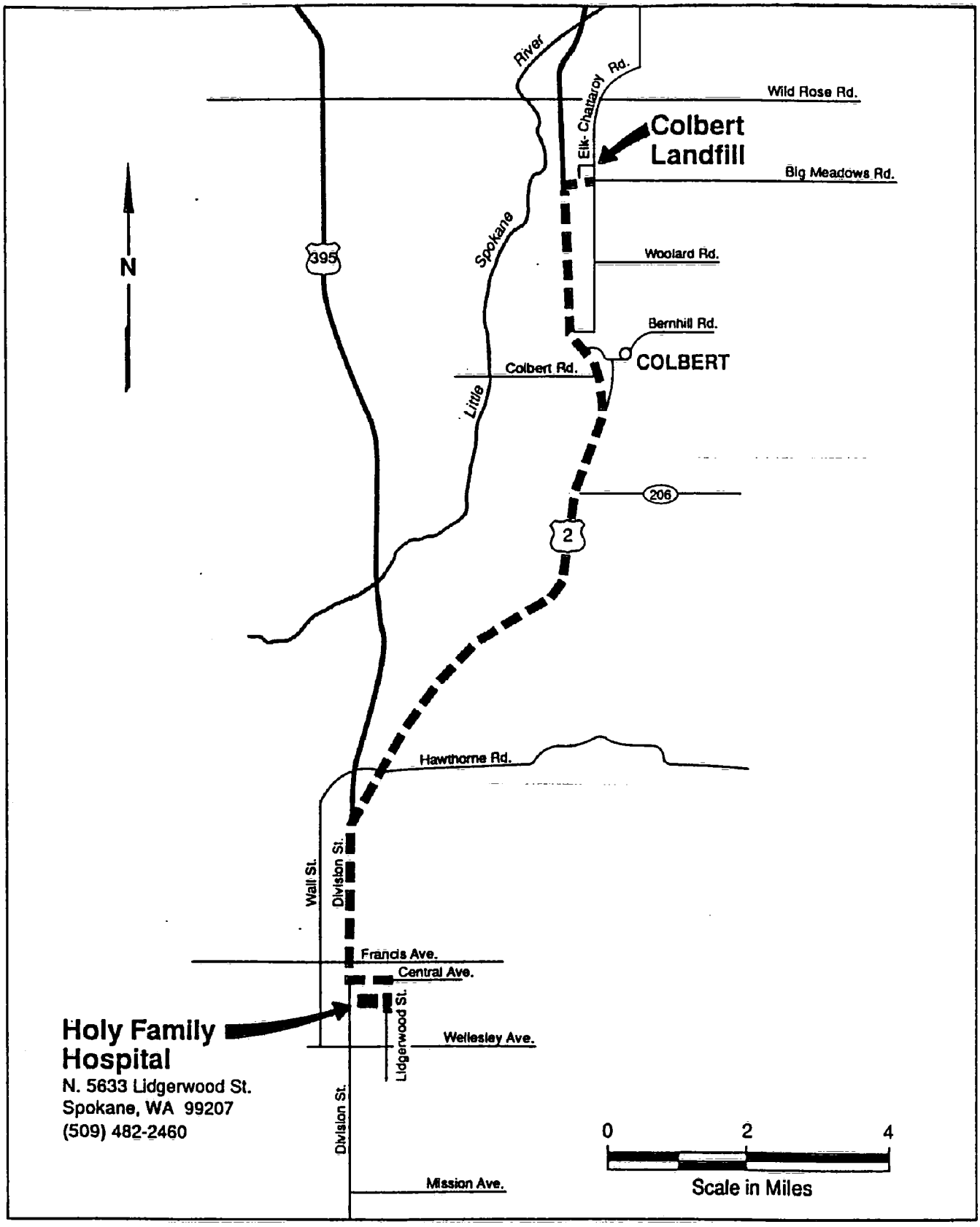
Fire District #4	911
Holy Family Hospital	(509) 482-2460
Ambulance Service	911
Sheriff's Desk	(509) 456-2240
Washington State Department of Ecology	(509) 456-2926
EPA Region 10 (Environmental Emergencies)	(206) 553-1263
Poison Center	1-800-572-5842

In the event of an emergency, do the following:

1. Call 911 for help as soon as possible. Give the following information:
   - WHERE the emergency is - the Colbert Landfill is located at the northwestern quadrant of the intersection of Elk-Chattaroy, Yale, and Big Meadows Roads.
   - PHONE NUMBER you are calling from.
   - WHAT HAPPENED - type of injury.
   - WHAT is being done for the victim(s).
   - YOU HANG UP LAST - let the person you called hang up first.

2. If the victim can be moved, transport the individual to the hospital while one person calls the hospital to notify them. If the injury or exposure is not life threatening, decontaminate the individual first. If decontamination is not feasible, wrap the individual in a blanket or sheet of plastic prior to transport.

3. Notify the Site Safety Officer/Field Coordinator and the Project Manager.



DIRECTIONS: Drive to Highway 2 (Highway 2 runs north and south between the Little Spokane River and Chattaroy Road). Drive south on Highway 2 toward Spokane and follow through town (turns into Division St.). Get in the far left lane. Turn left at Central Avenue (at Perkins Restaurant). Drive one block and take a right on Lidgerwood Street. Follow signs to the emergency entrance.

	Route to Holy Family Hospital	Figure 1

1.0 INTRODUCTION

This document presents the Health and Safety Plan for Phase II Remedial Design/ Remedial Action (RD/RA) activities (Plan) to be conducted as part of the Colbert Landfill Superfund Project (Project). The Health and Safety Plan contains a description of the Project background and existing site conditions, and establishes health and safety requirements to be followed during Project Phase II RD/RA activities. This Plan addresses only those health and safety procedures and requirements relevant to Phase II construction activities, which include construction of the groundwater extraction, treatment, and discharge systems provided for in the Consent Decree Scope of Work (SOW), and associated groundwater monitoring system expansion. Health and safety procedures and requirements relevant to long-term operation of these systems will be addressed in the operations and maintenance plans, to be submitted with the Phase II plans and specifications.

The Plan covers activities regulated by 29 CFR 1926 (Federal safety and health regulations for construction) or WAC 296-155 (State safety standards for construction work), and includes Phase II criteria for hazard and risk evaluation, Project health and safety organization, air monitoring procedures, descriptions of levels of personal protection and required equipment, decontamination procedures, safety rules and procedures, emergency information, training requirements, and requirements for routine health care and health monitoring.

This Plan has been prepared by Landau Associates, Inc. (Landau Associates), Spokane County's engineering consultant for design of the Colbert Landfill Remedial Action. In addition to those references cited in the text of this Plan, several general references were also used in its preparation. These include: American Conference of Governmental Industrial Hygienists (1990), American Red Cross (1987), NIOSH/OSHA/USCG/EPA (1990), Sax (1989), and Sittig (1985).

1.1 PROJECT BACKGROUND

The Colbert Landfill (Landfill) is an inactive 40-acre municipal solid waste landfill located approximately 15 miles north-northeast of Spokane, WA, and 2.5 miles north of Colbert, WA, as shown on the Regional Location Map (Figure 1.1). The Landfill operated until 1986, when it became filled to capacity with municipal and commercial waste.

Groundwater in the vicinity of the Landfill is contaminated with chlorinated organic solvents. At least a portion of this contamination has been traced to spent solvents that were

disposed of at the Landfill. Solvents were reportedly disposed of at an average rate of several hundred gallons per month for a number of years, and consisted primarily of 1,1,1-trichloroethane (TCA) and methylene chloride (MC). Other organic solvents were also detected in groundwater near the Landfill, including trichloroethylene (TCE), tetrachloroethylene (PCE), 1,1-dichloroethylene (DCE), and 1,1-dichloroethane (DCA). These six chlorinated organic solvents are referred to as the "Constituents of Concern."

A remedial investigation (RI) conducted by Golder Associates (1987a) determined that the two primary aquifers in the Landfill vicinity (the Upper and Lower Sand/Gravel Aquifers), and a low-productivity aquifer to the east of the Landfill (Weathered Latah/Basalt Aquifer) are contaminated with some or all of the Constituents of Concern previously described. A feasibility study (FS) conducted by Golder Associates (1987b) recommended a pump and treat remedy to address this groundwater contamination.

The U.S. Environmental Protection Agency (EPA) released its Colbert Landfill Record of Decision (ROD) for public comment in September 1987 (EPA 1987). The remedial action site (Site) is defined in the ROD as the area of potential impact surrounding and including the Landfill, as shown on Figure 1.1. Based on recommendations in the FS, the ROD specifies that a performance-based groundwater pump and treat system be used to meet ROD-specified Project performance criteria for the Constituents of Concern (Performance Standards). These Performance Standards establish the level of treatment for extracted groundwater and define the maximum constituent concentrations that must be achieved for completion of the remedial action. The ROD, while requiring a pump and treat remedy, allows flexibility in the system's design and configuration. The pump and treat system to be implemented in Phase II is described briefly in Section 1.2 of this plan.

Subsequent to implementation of the ROD, a Consent Decree for the Colbert Landfill (U.S. District Court 1988) was negotiated between the EPA and the Washington State Department of Ecology (Ecology) (as Government Plaintiffs), and Spokane County (County) and Key Tronic Corporation (Key Tronic) (as Potentially Responsible Parties). By this action, the County agreed to implement the EPA-selected remedy in accordance with the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) requirements and the State of Washington Hazardous Waste Cleanup Act, codified as Chapter 70.105B RCW.

It was recognized during development of the Consent Decree that available data were inadequate to design the selected remedial action. Consequently, the remedial action is being implemented in phases. Phase I activities included additional characterization of groundwater

contaminant distribution and hydrogeology at the Site, and development of engineering parameters needed for design of the final (Phase II) remedial action. During Phase I, only groundwater samples were analyzed for contaminants; soil samples were analyzed for physical properties only to support hydrogeologic characterization. The design, construction, and operation of the final remedial action will be accomplished during Phase II.

Phase I activities were completed in July 1991, and Phase I results are provided in the Final Phase I Engineering Report (Landau Associates 1991). Phase II health and safety considerations are largely based on the data collected and observations made during Phase I.

1.2 REMEDIAL ACTION DESCRIPTION

This Health and Safety Plan has been prepared to address Phase II construction associated with the groundwater pump and treat remedial action specified in the ROD. The remedial action is subdivided into the following three systems: 1) the groundwater extraction system, 2) the groundwater treatment system, and 3) the discharge system. The groundwater extraction system is comprised of three subsystems:

- The South Interception System, which will consist of a series of extraction wells installed to intercept the contaminant plume in the Upper Sand/Gravel Aquifer
- The West Interception System, which will consist of a series of extraction wells installed to intercept the contaminant plume in the Lower Sand/Gravel Aquifer
- The East Extraction System, which will consist of extraction wells installed in the Lower Sand/Gravel and Latah/Basalt Aquifers near the Landfill for source control.

Extracted groundwater will be pumped via a subsurface piping system to the treatment system, which will be designed to reduce Constituents of Concern in the extracted groundwater to ROD-specified Performance Standards. Air stripping has been identified as the method of treatment. After treatment, water will be discharged to the Little Spokane River (from all systems) via a tight line discharge system. A conceptual design for the Phase II remedial action, presented in the Phase I Engineering Report (Landau Associates 1991), is shown on Figure 1.2.

1.3 SITE CONDITIONS

The Colbert Landfill Site (as designated in the ROD) is approximately 6,800 acres in area and is located entirely within the drainage basin of the Little Spokane River. The Site extends north of the Landfill about ½-mile, west about 1 mile to the Little Spokane River, east a similar distance, and south approximately 5 miles to Peone (or Deadman) Creek, as shown on Figure 1.1.

The Landfill is located on a plateau that is bounded on the west by a steep slope descending toward the Little Spokane River and on the east by low granite and basalt hills. Surface drainage is to the west, towards the Little Spokane River.

The climate is characteristic of eastern Washington, with temperatures ranging from typical average summer highs of about 83°F to average winter lows of around 23°F. The relatively low annual precipitation of approximately 17 inches falls mainly during the winter months of November through February (NOAA 1985).

The geology of the Landfill area consists of a series of glacially and fluvially-derived materials deposited on an eroded landscape of clays, basaltic lava flows, and granitic bedrock. Groundwater in the area is primarily obtained from the Upper and Lower Sand/Gravel Aquifers, which have become contaminated by the Constituents of Concern. The remedial action is focusing on the extraction and treatment of contaminated groundwater from these two aquifers. The approximate extent of groundwater contamination is shown on Figures 1.3 and 1.4 for the upper and lower aquifers, respectively. The locations for existing and proposed Phase II monitoring and extraction wells are provided on Figure 1.5.

A detailed description of hydrogeologic conditions for the Landfill vicinity is presented in the Phase I Engineering Report (Landau Associates 1991).

1.4 HEALTH AND SAFETY PLAN PURPOSE, APPLICABILITY, AND ADHERENCE

This Plan describes specific responsibilities, training, protective equipment, and operating procedures required for Phase II RD/RA construction activities. Modifications, where appropriate, may be made to this Plan to address specific activities.

This Plan applies to all personnel onsite. Contractors, subcontractors, regulatory agency representatives, and visitors entering the Project work zones must adhere to the requirements of this Plan by adoption, or use another plan which meets the minimum requirements established by this Plan.

All individuals must read this Plan prior to participation in intrusive field work[1]. If any information presented in this plan is unclear, the reader must contact the Site Safety Officer/Field Coordinator or the Field Construction Project Manager (Project Manager) for clarification prior to participating in any intrusive field activity. Once the information has been read and understood, the individual must sign the ACKNOWLEDGMENT (Form 1.1), and the signed form will be placed in the Project file. Before any intrusive activities are conducted under this work phase, a training session will be conducted to familiarize personnel with Project health and safety procedures, including a discussion of safety issues pertinent to the area of work (see Section 10).

This Plan is flexible and allows unanticipated site-specific problems to be addressed, while providing adequate and suitable worker protection. The Plan may be modified at any time, based on the judgment of the Site Safety Officer/Field Coordinator and the Project Manager. Any modification will be presented to the onsite team during a safety briefing and documented using Form 1.2. Team members will sign this form, and the original will be attached to the Plan copy maintained in the Project file. Copies will be attached to the Plan in the Project office trailer and in each field team vehicle.

1.5 RESPONSIBLE INDIVIDUALS

The Project Manager, the Site Safety Officer, and the Field Coordinator will have primary responsibility for health and safety during Phase II field investigations. Any one of these individuals may temporarily suspend an investigation if there appears to be a threat to health or safety. The Site Safety Officer, Field Coordinator, or a qualified designee (approved by the Site Safety Officer) will be present at all times during intrusive activities. The Site Safety Officer and Field Coordinator will be adequately trained (before site work begins) to meet MISHA and OSHA minimum training requirements. The responsibilities of the Site Safety Officer and Field Coordinator will likely be fulfilled by one person. Therefore, while the responsibilities of each position are discussed separately in the description of safety-related responsibilities presented below in this section, the remainder of the Plan will treat the two positions as one (Site Safety Officer/Field Officer).

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(1) For the purpose of this Plan, intrusive activities is defined as any subsurface work accomplished in an area and at a depth where contamination may reasonably be expected to be present.

1.5.1 Project Manager

The Project Manager has responsibility over all Project safety policies, planning, and execution. The Project Manager will be responsible for making project-level decisions regarding safety rules and operations in consultation with the Site Safety Officer/Field Coordinator.

1.5.2 Site Safety Officer

The Site Safety Officer will conduct the initial orientation training and will be the main point of contact on Project health and safety issues. He/she will be present onsite, intermittently, throughout the Project, and will periodically audit safety at the Site. The Site Safety Officer shall:

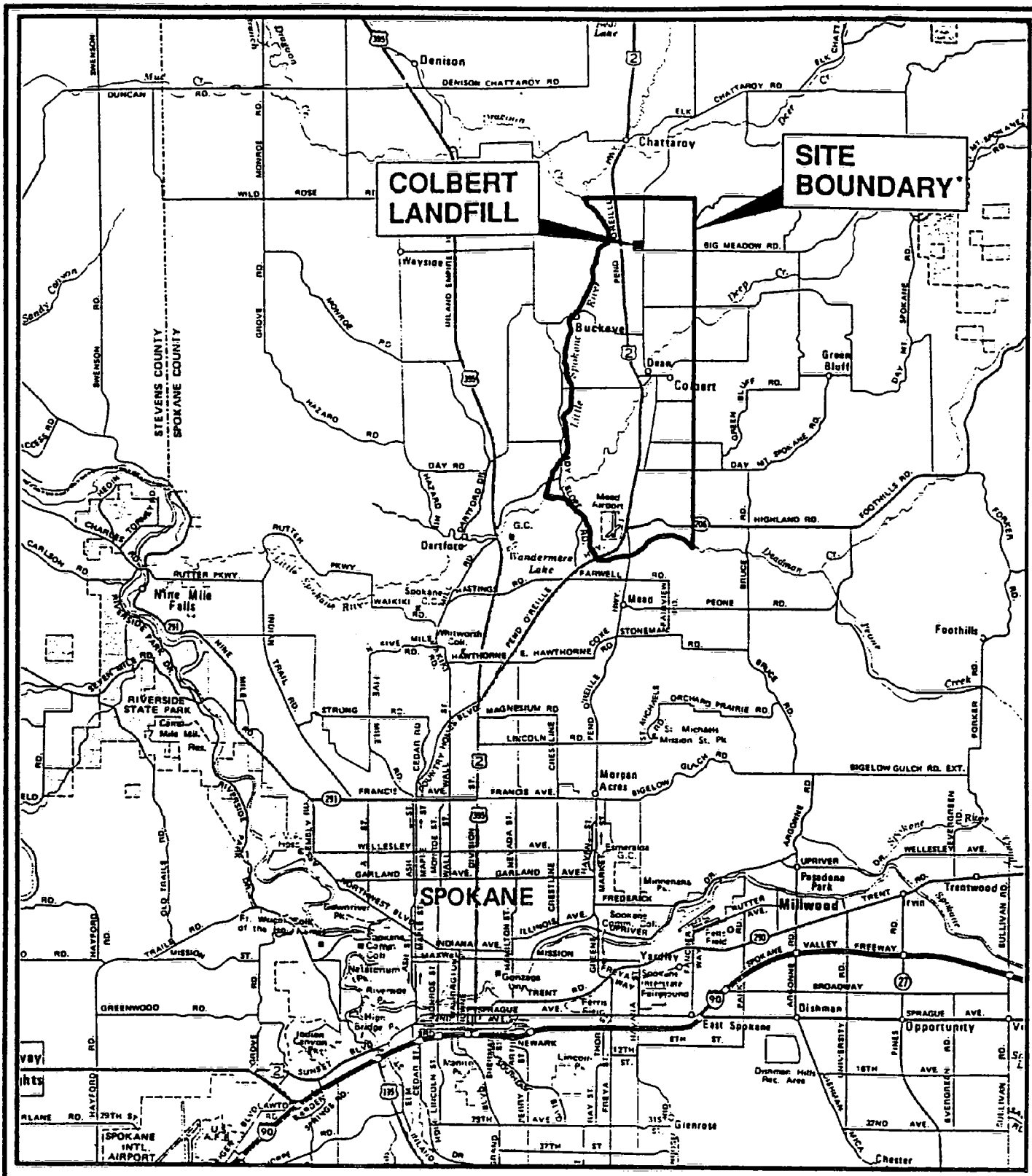
- Ensure that personnel are aware of the provisions of this plan, are instructed in safe work practices, and understand the planned procedures for dealing with onsite emergencies
- Inform personnel of the potential hazards associated with onsite operations
- Determine personal protection levels, necessary clothing, and equipment
- Correct any work practices or conditions that may result in injury to personnel or exposure to hazardous substances
- Verify that appropriate personal protective equipment is properly used by all employees at the start of the project and periodically thereafter
- Coordinate monitoring of organic vapors and explosive gases by field personnel (where applicable).

1.5.3 Field Coordinator

The Field Coordinator is responsible for all day-to-day activities, including implementation of the Plan. The Field Coordinator will implement the Plan as written, or consult with the Site Safety Officer (if separate positions) where alternatives or assistance may be desirable or necessary. The Field Coordinator will notify the Site Safety Officer (if separate positions) of any unanticipated conditions that arise so that any necessary modifications can be made to the Plan. Field team members will report suspect or unfamiliar conditions to the Field Coordinator. The Field Coordinator shall:

- Evaluate weather and hazard information and make any necessary modifications to work plans and personal protection levels to maintain personnel safety

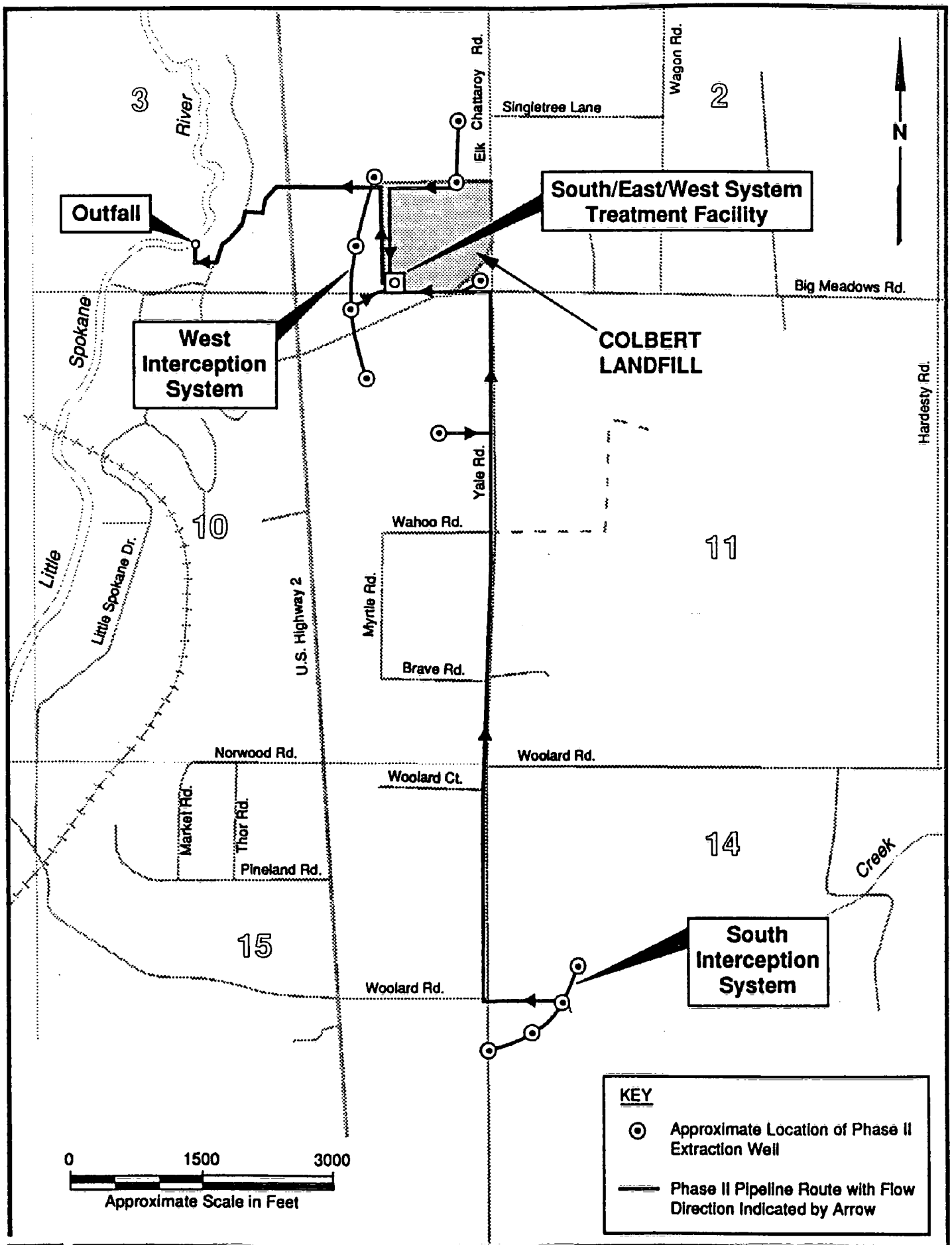
- Ensure that appropriate personal protection equipment is available and properly utilized by all employees
- Ensure that contractors, subcontractors, regulatory agency representatives, and site visitors planning to enter the industrial work zone, exclusion zone, or the contamination reduction zone (described in Section 3.0) read this plan and sign a form acknowledging that either this plan becomes their own or they will adhere to the minimum standards of this plan.



* As specified in the ROD (EPA 1987)

Regional Location Map

Figure 1.1



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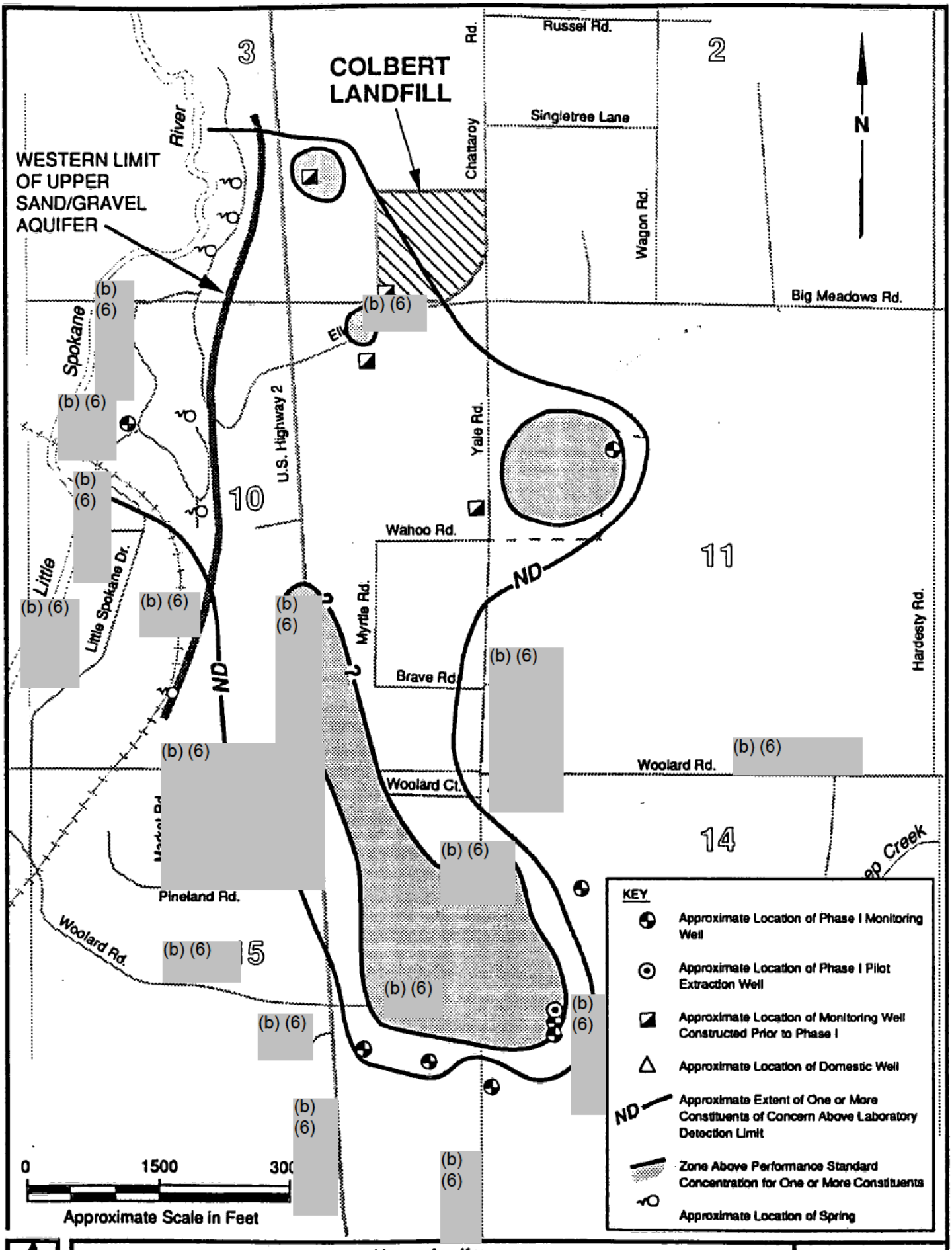
Phase II Conceptual Design | Figure 1.2



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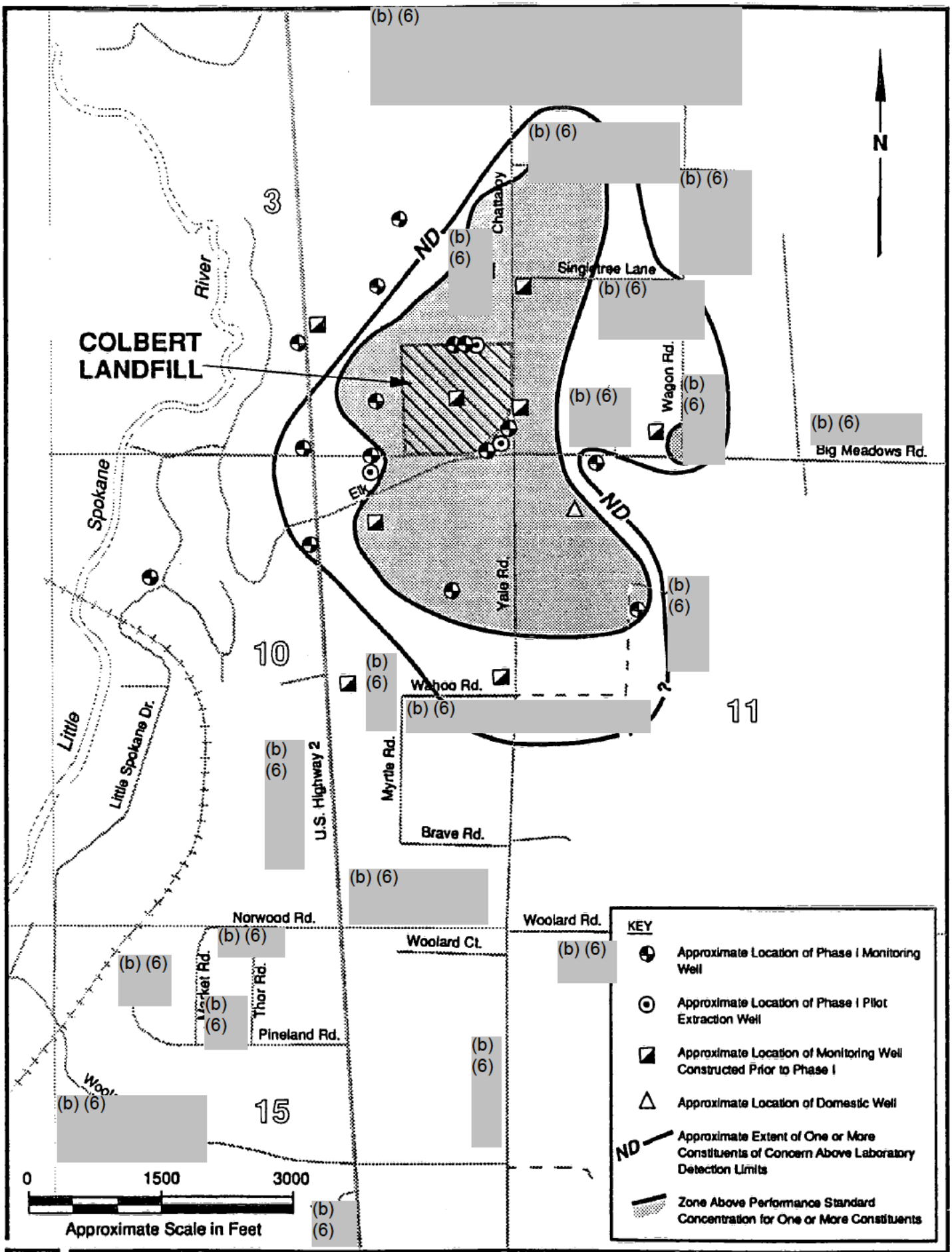
Upper Aquifers
Approximate Extent of Constituents of Concern

Figure 1.3



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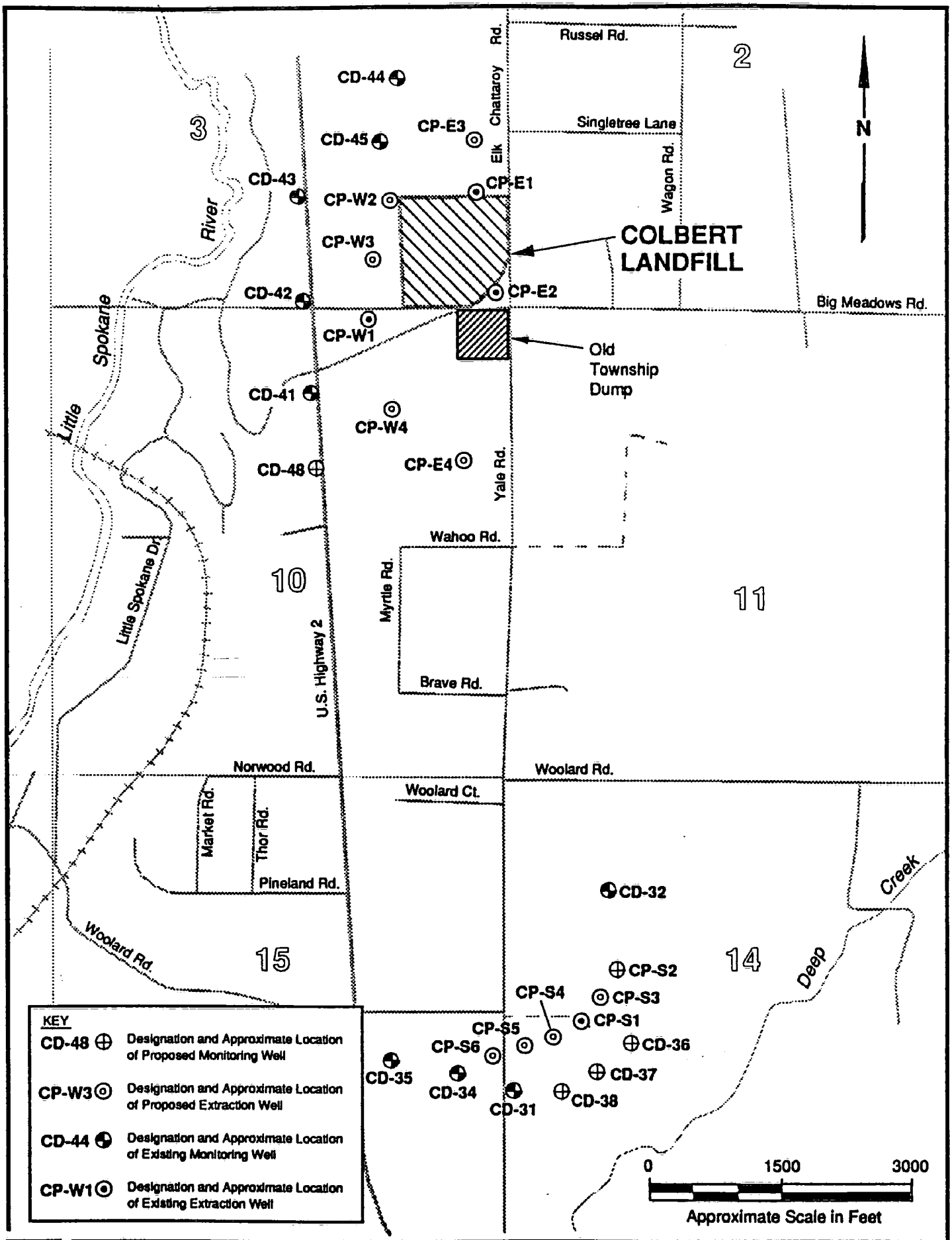
Lower Aquifers
Approximate Extent of Constituents of Concern

Figure 1.4



Location of Phase II Monitoring and Extraction Wells | Figure 1.5

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FORM 1.1

ACKNOWLEDGEMENT

I have read the attached Health and Safety Plan[a] for the Phase II RD/RA Activities at the Colbert Landfill. I have discussed any questions I have regarding this plan with my supervisor and/or the Site Safety Officer/Field Coordinator, and I understand the requirements.

Employee _____ Date _____

Supervisor _____ Date _____

(a) A copy of this Health and Safety Plan is to be placed in the support zone trailer and in each field vehicle.

FORM 1.2[(a)]

MODIFICATION TO HEALTH AND SAFETY PLAN
PHASE II RD/RA ACTIVITIES
COLBERT LANDFILL

DATE __/__/__

Modification: _____

_____

_____

_____

Reasons for Modification: _____

_____

_____

_____

Signature of Site Personnel Briefed:

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Name: _____ Date: _____

Approvals

Site Safety Officer/Field Coordinator: _____

Project Manager: _____

Others: _____

(a) The original of this Health and Safety Plan modification form will be filed in the project file. A copy of this form is to be placed with the Health and Safety Plan maintained in the support zone trailer and in each field vehicle.

2.0 HAZARD/RISK EVALUATION

The scope of Phase II RD/RA activities includes: 1) installation and sampling of groundwater monitoring wells and extraction wells near the anticipated perimeter of the contaminant plumes, and 2) construction of the treatment system (stripping tower), and water conveyance system. Most of the wells are located at a distance from the Landfill, although the treatment system will be located near the southwest corner of the Landfill.

The degree of overall hazard depends on the potential for: 1) exposure to toxic chemicals; 2) physical hazards from the use of general construction, drilling, sampling, and testing equipment; 3) physical hazards including debris, uneven terrain, rattlesnakes, poisonous spiders, poor footing, and surface water; 4) extremes of the summer and winter climate in the Spokane area; and 5) the possibility for fire/explosion when drilling or excavating through soil adjacent to the refuse disposal area. The degree of hazard or risk associated with intrusive activities, and the accompanying level of stringency for health and safety procedures varies, depending upon the area where the intensive work is to take place. For example, health and safety procedures will be the most stringent for intrusive work performed in the refuse disposal area[1] and less restrictive for work performed in areas outside of the refuse disposal area. Currently, no intrusive activities are planned in Phase II for the refuse disposal area, where potential worker health risk is greatest. However, because the potential exists for intensive activity in this area, associated health and safety risks and procedures for this area are addressed in this Plan.

Well drilling and general construction activities pose the greatest risk of physical injury during Phase II. To minimize the risk of injury from these activities, the drilling contractor and general contractor will be required to operate all equipment in a safe and appropriate manner. All drilling activities will be conducted in a manner consistent with the recommendations provided in the National Drilling Federation Drilling Safety Guide (NDF 1985). Although not specifically covered by this Plan, all construction activities are to be conducted in compliance with the requirements of 29 CFR 1926 (Federal safety and health regulations for construction) and WAC 296-155 (State safety standards for construction work).

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(1) According to Spokane County, an approximate 30-ft buffer zone exists between the refuse disposal area and the Landfill property boundary.

2.1 CONTAMINANT CHARACTERISTICS

Several previous investigations and sampling efforts have been performed to determine the type and concentration of chemical contaminants in groundwater, and in soil samples collected at aquifer depths (between about 80 feet and 180 feet). There is only limited data available on the concentration of the Constituents of Concern in soil within the refuse disposal area of the Landfill.

Information developed during Phase I was used for assessing the hazards and risks outside of the refuse disposal area. These assessments focused on the Constituents of Concern, which are common industrial solvents (or their breakdown products).

The maximum concentrations detected in groundwater for the six Constituents of Concern during Phase I are presented in Table 2.1. Low levels (less than 0.04 ppm) of seven other volatile organic chemicals (chloroform; chloroethane; dichlorodifluoromethane; freon; 1,2-dichloroethane; 1,2-dichloropropane; and vinyl chloride) were also detected, but were less widely distributed.

Several soil samples were collected during the advancement of five borings drilled within the refuse disposal area to approximately 20 feet below the refuse as part of the RI. MC was the only chemical detected in these samples. However, volatile organic compounds other than MC may be present in refuse disposal area soils, since the borings were located outside of areas where the solvents were disposed and the drilling technique (air rotary) may have volatilized organic solvents prior to sampling.

2.1.1 Toxicity

Selected health and safety criteria for the Constituents of Concern are shown in Table 2.2. Vapor pressures are given to provide an indication of the chemicals' tendency to volatilize (the higher the vapor pressure, the more volatile the chemical is). Possible exposure routes include inhalation of vapors, absorption through the skin or eyes, and ingestion. Specific health effects associated with the Constituents of Concern are described below.

1,1,1-Trichloroethane (TCA)

TCA is a colorless, nonflammable liquid with a sweet odor. Target organs include the skin, eyes, cardiovascular system, and the central nervous system. TCA is irritating to the eyes, and repeated skin contact can lead to dermatitis. TCA acts as a narcotic and depresses the

central nervous system. Exposure symptoms include dizziness, uncoordination, and drowsiness. Available data indicate that TCA is not a cancer-causing substance (EPA 1991).

1,1-Dichloroethylene (DCE)

DCE is a liquid with a slight acrid odor at room temperature. Target organs include the respiratory system, eyes, and central nervous system. DCE is irritating to the eyes and other mucous membranes. Exposure symptoms include dizziness, nausea, and intoxication similar to alcohol. DCE is classified as a possible human carcinogen (EPA 1991).

1,1-Dichloroethane (DCA)

DCA is a colorless, clear, flammable liquid with a sweet odor. Target organs include the skin, liver, and kidneys. Exposure symptoms include central nervous system depression, skin irritation, drowsiness, and liver and kidney damage. DCA is classified as a possible human carcinogen (EPA 1991).

Trichloroethylene (TCE)

TCE is a colorless, non-flammable liquid with a sweet odor. Target organs are the respiratory system, heart, liver, kidneys, central nervous system, and skin. TCE vapor irritates the eyes, nose, and throat. Repeated and prolonged skin contact may cause dermatitis. Exposure symptoms include headache, dizziness, nausea, irregular heart beat, drowsiness, and fatigue. TCE is classified as a probable human carcinogen (EPA 1991).

Tetrachloroethylene (PCE)

PCE is a clear, colorless, nonflammable liquid with a sweet odor similar to ether or chloroform. At higher concentrations, the odor tends to become unnoticeable after a short period of time. Repeated skin contact can cause dermatitis. High concentrations may cause eye and nose irritation. Target organs include the liver, kidneys, eyes, upper respiratory system, and central nervous system. Signs and symptoms of overexposure include malaise, dizziness, headache, increased perspiration, fatigue, and decreased mental ability. PCE is classified as a probable human carcinogen (EPA 1991).

Methylene Chloride (MC)

MC is a clear, colorless, liquid with an aromatic odor. Target organs include the skin, cardiovascular system, eyes, and the central nervous system. Repeated contact with MC vapor irritates the eyes and upper respiratory tract. Repeated skin contact may cause dermatitis. Prolonged exposure symptoms include headache, irritability, and numbness and tingling in the limbs. MC is classified as a probable human carcinogen (EPA 1991).

As some of the above exposure symptoms resemble signs of cold or flu, workers should inform the Site Safety Officer/Field Coordinator whenever they are feeling ill. The Site Safety Officer/Field Coordinator will review the work area and previous activities to determine if overexposure may have occurred, and if current safety procedures are adequate.

2.1.2 Potential for Chemical Exposure

All major intrusive construction activities conducted during Phase II will be outside of the refuse disposal area, and most intrusive activities will be at a distance of more than 100 feet from the refuse disposal area. Potentially contaminated soil outside the Landfill boundary (including its 30-ft buffer zone) is limited to the saturated zone, which begins at approximately 80 feet below the ground surface for the upper aquifer. Thus, the soil outside the Landfill boundary, and above the water table, is not considered potentially contaminated outside the Landfill boundary.

Levels of contamination in groundwater outside the refuse disposal area are anticipated to be relatively low (less than about 4 ppm). Consequently, vapor exposure hazards from groundwater or the potential for inhaling contaminated dust are minimal. However, the potential for inhaling chemical vapors or contaminated dust is greater for drilling or excavation within the refuse disposal area and (to a lesser extent) the 30-ft buffer zone immediately adjacent to the refuse disposal area. It should be noted that no exceedances of permissible exposure level (PEL) were detected during Phase I health and safety monitoring, including work performed in the buffer zone adjacent to the refuse disposal area.

Although no construction is anticipated for Phase II within the refuse disposal area, pipeline construction will occur within the buffer zone adjacent to the refuse disposal area. Worker protection measures will be necessary for intrusive activities within this area during Phase II.

In addition, the Old Township Dump, located immediately south of the Landfill, also offers a potential source for chemical exposure. While not specifically evaluated as part of this

Project, available data indicate that chlorinated solvents similar to those disposed of at the Landfill may also have been disposed of at the Old Township Dump. The location of the Old Township Dump is shown on Figure 1.4.

No intrusive activities are anticipated within the Old Township Dump boundary. However, a pipeline will be constructed along the east boundary, adjacent to Yale Road. Worker protection measures applied to the Landfill buffer zone also will be applied during pipeline construction adjacent to the Old Township Dump.

2.2 PHYSICAL INJURY

Field work near drill rigs, trucks, cranes, compressors, pumps, generators, and other construction-related equipment will pose physical hazards associated with heavy equipment operation. Workers will need to be aware of this activity and be prepared to avoid moving equipment. The Site Safety Officer/Field Coordinator will be responsible for notifying utility officials prior to initiating intrusive activities and for verifying that the drilling location is free of underground utilities (i.e., gas, electrical, water, and sewer lines). The general contractor will be responsible for notifying utility officials prior to initiating all other intrusive activities, and for addressing underground utilities encountered during construction in a safe and appropriate manner.

Construction Safety Standards and General Occupational Health Standards provided in Washington Administrative Code (WAC) 296-155 and WAC 296-62, respectively, will be followed. These WAC chapters provide personal health and safety provisions and requirements related to avoiding physical injury as follows:

- WAC 296-155; Construction Safety Standards: This chapter provides general health and safety requirements associated with construction sites and equipment, including:
  - Part A: General safety and health provisions
  - Part B: Occupational health and environmental control
  - Part C: Personal protective and life saving equipment
  - Part D: Fire protection and prevention
  - Part E: Signs, signals, and barricades
  - Part F: Material handling, storage, use, and disposal
  - Part G: Tools - hand and power
  - Part H: Welding and cutting

- Part I: Electrical
- Part J: Ladders, scaffolds, and elevated work platforms
- Part K: Floor openings, wall openings, and stairways
- Part L: Cranes, derricks, hoists, elevators, and conveyors
- Part M: Motor vehicles, mechanized equipment
- Part N: Excavation, trenching, and shoring
- Part O: Concrete, concrete forms, and shoring
- Part P: Steel erection
- Part Q: Tunnels and shafts, caissons, coffer dams, and compressed air
- Part R: Miscellaneous construction requirements

(and others)

- WAC 296-62; General Occupational Health Standards: This chapter provides general rules for occupational health and safety at the workplace, including:
  - Part A: Occupational health and environmental control
  - Part B: Access to records
  - Part C: Hazard communication
  - Part D: Controls and definitions
  - Part E: Respiratory protection
  - Parts F/G: Carcinogens
  - Parts H/I: Air contaminants

2.3 HEAT-RELATED ILLNESSES

Summer temperatures in the Spokane area may at times exceed 100 degrees Fahrenheit (^{o}F). Heat-related illness can cause physical discomfort, loss of efficiency, personal injury, and, in the extreme, can be life-threatening. During periods of extreme hot weather, the Site Coordinator/Site Safety Officer may implement modified work hours, or suspend field activities, until more temperate weather returns.

Construction workers, drillers, and samplers are highly susceptible to heat-related illness when wearing protective clothing, which decreases natural body ventilation and, hence, cooling. Causes of heat-related illnesses include unacclimated workers, lack of physical fitness, being overweight, recent alcohol intake, dehydration, individual susceptibility, and cardiovascular disease. The three most common types of heat-related illness are heat cramps, heat exhaustion, and heat stroke, the symptoms of which are briefly described below.

Heat cramps are caused by profuse perspiration with inadequate fluid intake and chemical replacement (especially salts). Symptoms include muscle spasms and pain in the extremities and abdomen. First-aid treatment includes drinking half a glass of salt water (one teaspoon of salt per glass) every 15 minutes over a period of about one hour.

Heat exhaustion is caused by dehydration, or water deficiency. Symptoms include fatigue, nausea, headache, clammy and moist skin, and a pale complexion. First aid treatment includes taking the individual to a cooler environment and administering fluids.

Heat stroke is a life-threatening condition resulting from a failure of the body's temperature regulation ability, which leads to the loss of evaporative cooling and an uncontrolled accelerating rise in body temperature. If heat stroke is suspected, immediate medical attention is necessary. Symptoms of heat stroke include red, mottled, hot, and dry skin. First-aid treatment includes immediate cooling by spraying the individual with cool water or wrapping the individual in a wet sheet and vigorous fanning of the individual to reduce body temperature.

2.3.1 Personnel Monitoring

Prevention of heat-related illness can be accomplished by medically screening workers, allowing workers to slowly acclimate to heat exposure, monitoring workers during sustained heat, and ensuring that ample drinking water is available at all times and is taken frequently during the work day.

The potential for heat-related illness can be drastically reduced by following a work/rest schedule for workers wearing protective gear. The schedule will be determined by the Site Safety Officer/Field Coordinator and will be based on field conditions, level of work effort, and individual reactions.

The Site Safety Officer/Field Coordinator will evaluate the health and physical fitness of field personnel wearing protective gear prior to beginning Project field activities. This may include taking baseline pulse and temperature readings. These readings will provide the basis for comparison if vital sign monitoring becomes necessary during hot weather conditions. A person's body temperature and pulse rate will tend to rise while working in hot weather conditions. Workers who are ill (i.e., cold or flu), have sunburns, or other difficulties should inform the Site Safety Officer/Field Coordinator, as these conditions can affect vital sign readings.

If necessary, at the end of each work period, the workers will remove their protective clothing and the Site Safety Officer/Field Coordinator shall do one or more of the following for each worker:

(1) Take their oral temperature and proceed as given below:

   a. Less than or equal to 99° F - no action.

   b. Greater than 99° F and less than or equal to 99.7° F - cool them off with a water spray and do not allow them to return to work unless their temperature is 99° F at the end of the rest period.

   c. Greater than 99.7° F and less than or equal to 100.4° F - cool them off with a water spray, double their rest period, and do not allow them to return to work unless their temperature is less than or equal to 99° F. If heat exhaustion or heat stroke symptoms are present, seek medical attention.

(2) Take their pulse. If their pulse is over 110 beats per minute at the beginning of the rest period, shorten the next work cycle by one-third and keep the rest period the same. If the heart rate still exceeds 110 beats per minute at the next rest period, shorten the following work cycle by one-third.

(3) Check carefully for symptoms of heat illness and react accordingly.

(4) Have each person slowly drink cool, but not cold, water or diluted unsweetened fruit juice. It is important that fluid intake be regular (suggested intake is approximately 1 cup every 20 minutes).

Prior to each day's field activities, the team will ensure that sufficient drinking water or diluted fruit juice and ample cooling water (in a pressure sprayer) is on-hand. Be sure to keep all fluids and cooling water in the shade. Workers should remove their protective clothing as completely as possible during rest breaks to let the body cool and to help prevent heat rashes.

2.4 COLD-RELATED ILLNESSES

Cold temperatures can also pose health hazards to field workers. Winter temperatures in the Spokane area are known to drop well below freezing. To prevent cold-related health hazards, field activities may be delayed during extreme cold weather. The serious health effects that can result from exposure to cold temperatures include hypothermia and frostbite. Hypothermia results from the lowering of the body's deep core temperature. Body core temperatures below 96.8° F cause reduced mental alertness, reduction in rational decision-

making, and possibly the loss of consciousness (which is potentially fatal). A person with hypothermia should receive medical attention immediately.

Signs of frostbite include sudden whitening of the skin and numbness. Treatment includes warming with blankets, warm compresses, or lukewarm water. Hot water, ointments, or massage should not be used.

Workers should inform the Site Safety Officer/Field Coordinator if their hands, feet, or face feel numb, and workers should monitor each other for patches of pale skin on the face and ears.

Wind chill, or the cooling power of moving air, is of critical importance when evaluating cold exposure to field workers. The potential for frostbite increases with colder temperatures and higher wind speeds. Table 2.3 provides information on determining wind chill.

Pain in the extremities may be the first early warning sign of the onset of cold-related illnesses; one of the last stages is severe shivering. Workers experiencing shivering should inform the Site Safety Officer/Field Coordinator and should go to the heated support zone trailer until they feel that they have totally recovered from the effects of the cold weather. The Site Safety Officer/Field Coordinator should monitor the remaining field team members.

Workers must wear adequate insulating clothing whenever temperatures are expected to be below 40° F. The most difficult areas to keep warm are the hands and feet. Light polypropylene or cotton liner gloves (worn under PVC inner gloves) will be provided during the cold season. Workers may choose to wear leather or another type of heavier outer gloves (rather than the usual neoprene gloves). However, these outer gloves will then be treated as contaminated if they have been used in the refuse disposal or buffer zone areas. In addition, these outer gloves will be left in a clean plastic bag in the support zone area and shall not be taken back to the worker's car or home.

The steel-toe insert in neoprene chemical resistant boots aggravate the problem of cold feet during the winter months. To help alleviate this problem, workers will be provided neoprene boots with oversized steel toe and shank that will accommodate extra wool socks or a felt liner. Workers should not try to wear extra socks inside their normally-sized steel toe and shank boots, as this can lead to reduced circulation, resulting in even colder feet.

Other problems can arise during the cold season (i.e., duct tape may not stick, nitrile outer gloves can freeze, respirator exhalation valves can freeze shut, pens may not write, and decontamination water may freeze). Some of these problems can be eliminated (i.e., using a special tape made for cold weather use, or adding a little antifreeze to the boot wash water);

however, workers and managers should be prepared for tasks taking more time during the winter months.

2.5 FIRE/EXPLOSION

There is the potential for encountering pockets of potentially explosive methane gas (commonly present at landfills) when conducting intrusive activities in the area adjacent to the refuse disposal zone, as well as encountering unknown hazardous materials if intrusive activities are conducted within the refuse disposal zone. Fire extinguishing equipment will be available and easily accessible on each drill rig. This equipment will include dry chemical fire extinguishers and shovels for use in responding to minor fires only. In the event of a major fire or explosion, all personnel will immediately evacuate to a safe area upwind. The Site Safety Officer/Field Coordinator will evaluate the need for further evacuation and/or emergency services.

Catalytic converters on the underside of vehicles are sufficiently hot to ignite dry prairie grass. Workers should avoid driving over dry grass that is higher than the ground clearance of the vehicle, and be aware of the potential fire hazard posed by the catalytic converter at all times. A running vehicle should never be allowed to sit in a stationary position over dry grass or other combustible materials.

2.6 RATTLESNAKES

Rattlesnakes are known to be present in the Spokane area, and although the potential for encountering a rattlesnake is low, workers should be cautious when walking through brush and vegetation. Rattlesnakes are usually 35 to 45 inches long, have a pit between the eye and nostril on each side of a triangular-shaped head, elliptical pupils, and two large fangs. Non-poisonous snakes have round pupils, more rounded heads, and no fangs or pits.

First aid for a snakebite victim includes: 1) transporting the victim to the hospital as quickly as possible; 2) keeping the victim still, calm, and preferably in a lying position; and 3) immobilizing the bitten extremity and keep it at or below the heart level.

2.7 SPIDERS

Black widow spiders have been observed at the Site, and brown recluse spiders are also likely to be present. Both are typically reclusive and prefer warm dark areas for their nests. Care should be taken when disturbing such potential nesting areas. First aid for a black widow, brown reclusive, or other venomous spider bite is identical to first aid for a snakebite.

TABLE 2.1

PHASE I MAXIMUM CONTAMINANT CONCENTRATIONS IN GROUNDWATER
COLBERT LANDFILL[a]

Constituent of Concern	Maximum Concentration (ppb)[b]	
	Upper Aquifer	Lower Aquifer
1,1,1-Trichloroethane (TCA)	400	4,200
1,1-Dichloroethylene (DCE)	43	560
1,1-Dichloroethane (DCA)	180	120
Trichloroethylene (TCE)	14	580
Tetrachloroethylene (PCE)	ND[c]	2.9
Methylene Chloride (MC)	14	4,400

(a) Landau Associates (1991).

(b) ppb = parts per billion; equivalent to micrograms per liter (µg/L).

(c) ND = not detected in any well in aquifer.

TABLE 2.2

SITE EXPOSURE ASSESSMENT
COLBERT LANDFILL

Chemical Constituent	Abbreviation	Maximum Concentration in Groundwater (ppb)[a]		Health and Safety Criteria		
		Upper Aquifer	Lower Aquifer	Exposure Limit In Air[b](ppm)	IDLH[c] (ppm)	Vapor Pressure mm[d]
1,1,1-Trichloroethane	TCA	400	4,200	350	--	100
1,1-Dichloroethylene	DCE	43	560	1.0	--	--
1,1-Dichloroethane	DCA	180	120	100	4,000	230[e]
Trichloroethylene	TCE	14	580	50	1,000	100
Tetrachloroethylene	PCE	ND[f]	2.9	25	500	16
Methlyene Chloride	MC	35	4,400	100	5,000	380

(a) ppb = parts per billion; equivalent to micrograms per liter (µg/L).

(b) Washington State Permissible Exposure Levels (PELs), as provided in WAC 296-62 (May 1989); expressed in parts per million (ppm); equivalent to milligrams per liter (mg/L).

(c) IDLH = Immediately Dangerous to Life and Health (NIOSH; U.S. Dept. of Health and Human Services 1990).

(d) mm = millimeters of mercury. Vapor pressure will increase with temperature. From Dangerous Properties of Industrial Materials, 5th edition, Sax, 1989, except as noted otherwise.

(e) From NIOSH Pocket Guide to Chemical Hazards (U.S. Dept. of Health and Human Services 1990).

(f) ND = Not Detected.

TABLE 2.3

COOLING POWER OF WIND ON EXPOSED SKIN*

Estimated Wind Speed (in mph)	Actual Temperature Reading (Degrees F)											
	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
	Equivalent Chill Temperature Reading (Degrees F)											
calm	50	40	30	20	10	0	-10	-20	-30	-40	-50	-60
5	48	37	27	16	6	-5	-15	-26	-36	-47	-57	-68
10	40	28	16	4	-9	-24	-33	-46	-58	-70	-83	-95
15	36	22	9	-5	-18	-32	-45	-58	-72	-85	-99	-112
20	32	18	4	-10	-25	-39	-53	-67	-82	-96	-110	-121
25	30	16	0	-15	-29	-44	-59	-74	-88	-104	-118	-133
30	28	13	-2	-18	-33	-48	-63	-79	-94	-109	-125	-140
35	27	11	-4	-20	-35	-51	-67	-82	-98	-113	-129	-145
40	26	10	-6	-21	-37	-53	-69	-85	-100	-116	-132	-148

(Wind speeds greater than 40 mph have little addi-tional effect.)	LITTLE DANGER In < hr with dry skin skin. Maximum danger of false sense of security.	INCREASING DANGER Danger from freezing of exposed skin within one minute.	GREAT DANGER Skin may freeze within 30 seconds.

* Expressed as an equivalent temperature under calm conditions. Developed by U.S. Army Research Institute of Environmental Medicine, Natick, MA., as cited by the American Council of Hygienists, 1990-1991 Threshold Limit Values.

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3.0 WORK AREAS

This section presents descriptions of the designed controlled access zones to be established around areas where intrusive activities will occur during Phase II RD/RA construction. Intrusive activities are not anticipated to occur in the refuse disposal area. Therefore, only industrial work zones (established around intrusive activities outside the refuse disposal area) are anticipated under Phase II. However, since some minor potential still exists for intrusive activities to occur within the refuse disposal area during Phase II construction, the establishment of the more stringent concentric controlled access zones around such intrusive activities may be required. Therefore, refuse disposal area controlled access zones (exclusion zones, contaminant reduction zones, and support zones) are also described in this section. Work area designations only apply to drilling activities. General construction activities are subject to the construction safety standards discussed in Section 2.2.

3.1 INDUSTRIAL WORK ZONE

Chemical exposure hazards are suspected to be minimal for intrusive activities conducted outside of the refuse disposal area. However, physical hazards posed by the use of heavy equipment (e.g., drill rigs, compressors, etc.) warrant the institution of controlled access to any of these work areas. Therefore, an industrial work zone, designated with caution tape or traffic cones, will be instituted within 50 ft of Phase II intrusive activities conducted outside of refuse disposal areas. When working adjacent to public roads, work zone boundaries may be modified to allow continued traffic flow. Only field team members will be allowed in this industrial work zone. Protective clothing requirements in the industrial work zone are less stringent than those in the zones (described below) that would be established around intrusive work in the refuse disposal area (Section 6.0).

3.2 EXCLUSION ZONE

The exclusion zone is the area in which the highest hazard level exists. The exclusion zone will be an area within a 50-ft radius immediately surrounding any borehole or monitoring well located within the refuse disposal area. The exclusion zone will be designated with traffic cones or caution tape. Only field team members will be allowed in the exclusion zone. Protective gear (including full-face respiration, as described in Section 6.0 of this plan) will be required in those areas of the zone where air monitoring results indicate unacceptably high

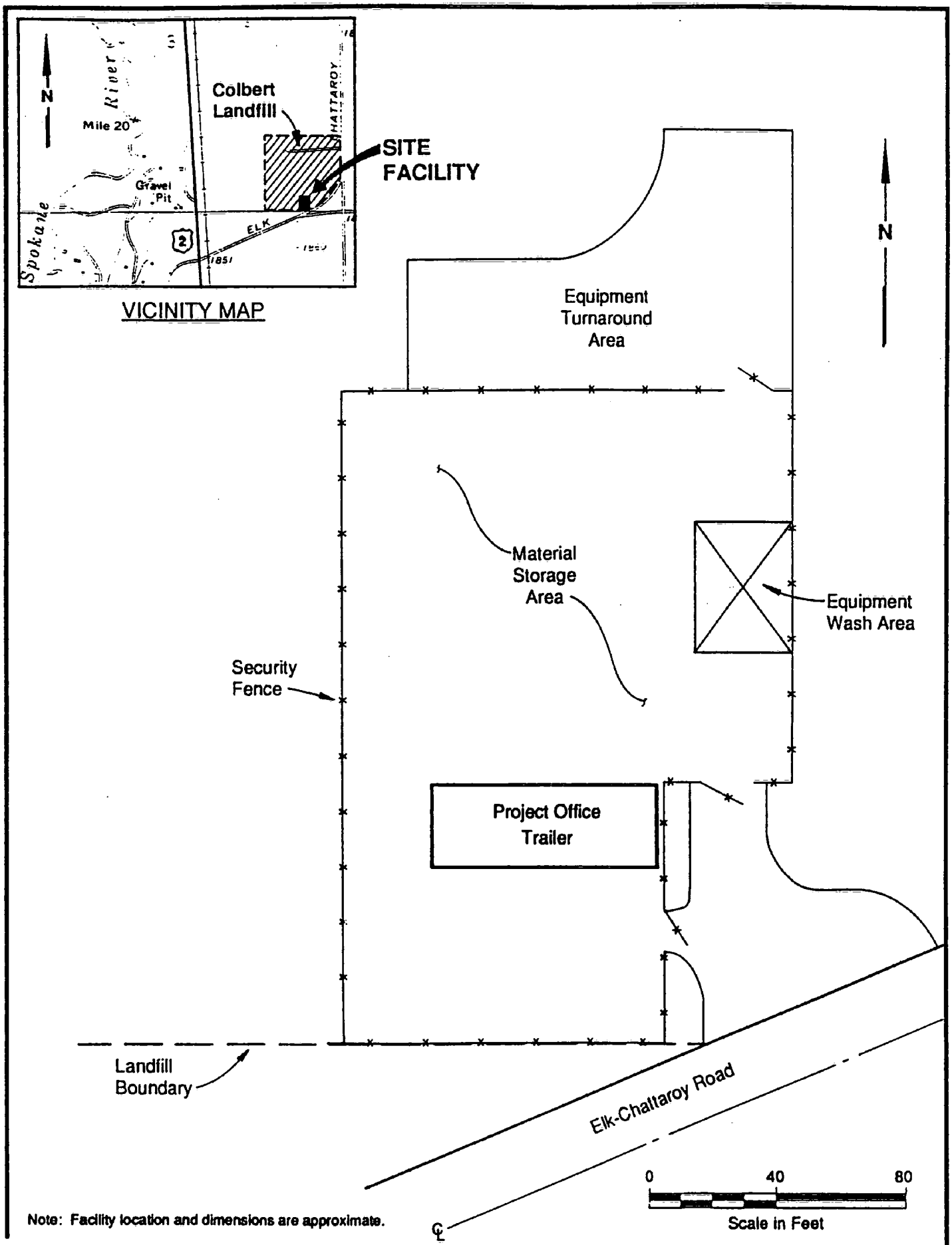
levels of volatile organic compounds (see Section 5.0, Table 5.1). As described for the industrial work zone, the boundaries of the exclusion zones may be modified to allow traffic flow along public roads, provided that doing so does not expose the public to health or safety risks.

3.3 CONTAMINATION REDUCTION ZONE

The contamination reduction zone will consist of the 10-ft wide area located between the 50 and 60 ft radii from a monitoring well or borehole located within the refuse disposal area, and will be established for both personnel and equipment decontamination. This zone will be used to prevent the transfer of contaminants to the support zone, and will be equipped with garbage bags, decontamination solutions, and other supplies. All potentially contaminated materials will be placed on plastic sheeting. Personnel will follow the decontamination procedures specified in Section 7.0 of this Plan. As described for the industrial work zone and exclusion zone, the boundaries of the contamination reduction zone may be modified to allow traffic flow along public roads, provided that doing so does not pose a threat of exposure or injury to the public.

3.4 SUPPORT ZONE

The support zone covers all areas outside of the contamination reduction zone and includes the Project support zone (which will be established for the duration of Phase II construction for the Project) and the field support zone (car or van at a distance from the Project support zone). The Project support zone will be located as indicated on Figure 3.1. The Project support zone will provide a secure area for clean equipment storage, an equipment wash area, and parking. Personnel rest and eating facilities and a telephone will be provided in the Project office trailer. Shower facilities will also be provided in the Project office trailer.



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	Project Support Zone Layout	Figure 3.1

4.0 SITE SECURITY

Site security will be the responsibility of the Site Safety Officer/Field Coordinator. Access to the Project support zone will be controlled by security gates. These gates will be closed during non-working hours.

All site visitors must be approved by the Project Manager or the Site Safety Officer/Field Coordinator. Visitors will be allowed to observe operations from the support zone only, and must obey all instructions of the Site Safety Officer/Field Coordinator. Individuals entering the work zones (other than the support zone) to work in potentially contaminated areas must complete the training and medical monitoring (discussed in Sections 10.0 and 11.0 of this Plan) prior to admittance.

Field team members will also be responsible for preventing unauthorized individuals from entering the industrial work, exclusion, or contamination reduction zones at drilling or sampling locations where contamination is suspected to be present. As public and news media interest in this Project has been high in the past, field team members should be prepared to advise onlookers to maintain a safe distance from intrusive activities. Field team members should direct the press to the Spokane County Utilities Department representative, or to the Site Safety Officer/Field Coordinator. Answers to questions posed by property owners should be limited to providing a description of the work that the field team is about to perform. Questions requiring interpretation or value judgements should be directed to the Spokane County Utilities Department representative or the Site Safety Officer/Field Coordinator.

At the end of each day's intrusive activities, boreholes or monitoring wells will be secured with a lock if possible, or by using the drill rig to place an immovable object over the opening. Equipment should be stored in a secure area each evening.

5.0 AIR MONITORING FOR RESPIRATORY PROTECTION

Inhalation is one of the potential routes of exposure to chemical toxicants, particularly for volatile organic compounds (such as those known to be present). The level of respiratory protection required for workers performing intrusive activities in contaminated or potentially contaminated areas will be determined based on the location of these activities (with respect to the Landfill), and the concentration of organic vapors measured near the work site during these intrusive activities.

Monitoring for organic vapors will be accomplished within the worker breathing zone using a photoionization detector (PID). The PID is a portable instrument that measures the concentration of ionizable compounds in air. The PID will be configured with a 10.6-electron volt ultraviolet lamp, which is sufficient to ionize most of the volatile organic chemicals previously detected in the groundwater (see Table 2.1) and which may be present in the atmosphere around intrusive activities. MC cannot be detected with standard field photoionization equipment. However, since the Permissible Exposure Level (PEL) for MC is relatively high (see Table 2.2), and during previous investigations it has only been present in combination with other "detectable" compounds, the use of field monitoring equipment capable of detecting MC is not considered necessary for Phase II construction work. DCE has a PEL of 1.0 ppm and cannot be reliably detected at that concentration with a PID. However, the maximum concentration of DCE detected onsite was 0.5 ppm in groundwater near the center of the Landfill. Therefore, based on the results of previous sampling, DCE is not considered to present an inhalation hazard at the concentration present onsite, and the use of field monitoring equipment capable of detecting DCE is not considered necessary for Phase II construction work. If significant concentrations (above 20 ppm) of volatile organic compounds are detected by the PID, other field monitoring equipment (i.e. detector tubes) will be used to ensure that MC and DCE are not present in concentrations approaching the PEL.

Air monitoring for total particulates or airborne dust levels will not be performed because soil samples collected during the RI did not reveal appreciable levels of contamination. However, physical dust control methods will be used (especially during air rotary drilling, if used). These dust control methods include wetting disturbed soil, and/or covering the rotary drill rig cutting hose and keeping it securely tied down as far downwind from workers as possible.

A Combustible Gas Indicator (CGI) will be used to monitor the atmosphere for potentially explosive methane gas near, and in boreholes installed in, the refuse disposal area, and in areas of intrusive work conducted within 50 ft of the refuse disposal area or the Old Township Dump (including pipeline trenches). The CGI will provide results as a percentage of the Lower Explosive Limit (LEL).

Backup instrumentation will be maintained onsite to ensure availability. The calibration of the PID and CGI will be checked each morning, and after each day's work. The instruments will not be recalibrated at the end of the day; however, the results of the calibration check will be recorded. These results will be recorded for the duration of Project construction.

5.1 ACTION LEVELS

Table 5.1 lists action levels for the Project that will trigger an upgrade of respiratory protection, or when area evacuation is necessary due to the presence of explosive gases. Workers will evacuate the area if the CGI indicates readings of over 20 percent of the LEL. Workers will allow the gases to vent and dissipate for at least 30 minutes before returning to take another reading with the CGI.

An action level of 25 ppm has been established for volatile organic vapors. The 25 ppm action level is the PEL for TCE. Action levels will not be based on DCE, which has the lowest PEL of all constituents detected onsite, because of its low detected concentrations. Respiratory protection will be required if breathing zone organic vapor reading exceed 25 ppm for over one minute, or exceed 50 ppm for a momentary peak.

All personnel who will be conducting intrusive work in the refuse disposal area will provide documentation of a successful fit test with a full-face respirator prior to beginning work. Subcontractors will be responsible for fit-testing their own employees. Respirators will be placed in clean plastic bags and stored in the work zone for easy access if they are needed.

A full-face respirator, equipped with organic vapor and high-efficiency particulate cartridges, provides a protection factor of 100. Thus, it may be worn in concentrations up to 100 times those established above. Field conditions are not expected to result in concentrations that reach or exceed this 100 protection factor level, conditions that would require use of an supplied air respirator (Level B protection). If conditions are encountered which would warrant Level B protection, the work area will be evacuated until concentrations fall below the action level for evacuation (Table 5.1).

TABLE 5.1

ACTION LEVELS FOR RESPIRATORY PROTECTION
COLBERT LANDFILL

Monitoring Parameter	Reading[a]	Level of Protection
Combustible Gas (during intrusive activities in the refuse disposal and work areas within 50 ft of the refuse disposal area	10-20% of Lower Exposure Limit (LEL)	Continue onsite monitoring with extreme caution as higher levels are encountered
	> 20% LEL	Explosion hazard; withdraw from area immediately
Organic Vapors[b] (during all intrusive activities within the refuse disposal area)	0-15 ppm over background[c]	Level D (modified)
	15-100 ppm over background	Level C: Full-face air purifying respirator equipped with organic vapor and high efficiency particulate cartridges
	>100 ppm over background	Withdraw from area immediately

(a) Sustained readings over a one minute duration.
(b) Determine using a PID or other appropriate organic vapor detector.
(c) Background readings obtained 50 ft upwind of site activity.

6.0 PERSONAL SAFETY EQUIPMENT

Levels of protection have been defined by the EPA in the Standard Operating Safety Guides (EPA 1984). The levels of protection that will be needed are described below.

6.1 LEVEL D

Level D protective equipment may be worn when there is no potential for splashing or unexpected inhalation of chemicals. Level D equipment includes:

- Hard hat when working around construction or moving equipment
- Safety glasses when working around construction or moving equipment
- Long-sleeved shirt and long-pants, or coveralls
- Gloves (neoprene or PVC gloves must be used when handling potentially contaminated items such as sample bottles or equipment)
- Boots/shoes with leather or chemical-resistant steel (or impact-resistant plastic) toe and shank.

Level D equipment may be worn during the following activities:

- During non-intrusive construction work in all areas
- During the first 60 ft of drilling outside the Landfill boundary (including the buffer zone) where contamination is limited to the saturated zone beneath the ground surface
- During intrusive work (other than drilling) within the 30-ft buffer zone adjacent to the refuse disposal area, provided air monitoring in excavation does not detect organic vapors above background.

6.2 LEVEL D (MODIFIED)

Level D equipment (modified) will be worn when a higher degree of dermal or skin protection is needed and respiratory protection is not needed. For intrusive work performed outside of the refuse disposal area at depths greater than 60 ft, Level D (modified) protective equipment will be required; however, contaminated vapor and dust exposure levels are expected to be minimal. Level D (modified) equipment includes:

- Hard hat (a splash shield will be used when a high splashing potential is present)
- Safety glasses

- One-piece disposable coveralls, hereafter referred to as "Tyvek" (saran or poly-coated Tyvek when needed for greater splash protection, or when raining)
- Thin PVC inner-disposable gloves
- Outer-disposable gloves (leather outer gloves may be worn, but gloves will be treated as contaminated if used in the exclusion zone)
- Boots with chemically resistant neoprene steel (or impact-resistant plastic) toe and shank
- Boot to Tyvek and glove to sleeve seams must be sealed with duct tape when drilling within the refuse disposal area.

Level D (modified) equipment may be worn during the following work activities:

- Drilling within the 30-ft buffer zone adjacent to the refuse disposal area
- During intrusive work (other than drilling) within the 30-ft buffer zone adjacent to the refuse disposal area, if air monitoring in excavations detects organic vapors above background
- Drilling at more than 60 ft below the ground surface at locations outside the refuse disposal area and 30-ft buffer zone
- Installing and developing wells
- Conducting minor intrusive work within the refuse disposal area (to depths less than depth of disposed refuse; encountered approximately 2-4 ft below present grade)
- Taking water level readings (eye protection required when deconning tape)
- Collecting groundwater samples (eye protection required when taking flow readings while purging well, and whenever the potential for splashing exists)
- When pressure washing.

Periodic (approximately once per hour and more frequently when necessary) air monitoring is required during these activities.

6.3 LEVEL C

Level C protection differs from Level D (modified) protection in that it affords a higher degree of respiratory protection. Air-purifying respirators are worn to reduce atmospheric contaminant levels before air enters the lungs. Level C protective equipment includes:

- Level D (modified) equipment (saran or poly-coated Tyvek) required when conducting intrusive work in the refuse disposal zone, and taped glove to Tyvek and boot to Tyvek seams whenever Level C is required
- Full-face respirator with high-efficiency particulate and organic vapor cartridges (MSHA/NIOSH approved).

Level C protection will be required for intrusive activities within the refuse disposal area where substantial volumes of disposed waste may actually be encountered (depths of 2-4 ft below ground surface or greater), or any areas where air quality monitoring indicates concentrations in excess of action levels listed in Section 5.0, Table 5.1, outside the refuse disposal area. Air monitoring during drilling is required about every ½ hour to a depth of about 90 ft, and about every hour at greater depths.

7.0 DECONTAMINATION

Workers leaving the industrial work zone (designated work area at locations outside the perimeter of the refuse disposal area) will remove disposable clothing and gloves. These items will be disposed of daily and will be treated as non-contaminated trash.

Strict decontamination procedures are required for intrusive work performed within the refuse disposal area. In these areas, all personnel and equipment must be properly decontaminated before entering the support zone from the exclusion zone.

7.1 REFUSE DISPOSAL AREA PERSONNEL DECONTAMINATION PROCEDURES

A decontamination area will be set up in the contamination reduction zone. Before commencing work, all personnel will be trained by the Site Safety Officer/Field Coordinator in decontamination procedures. Personnel decontamination will be as follows:

Step 1: Place equipment on plastic sheeting just inside contamination reduction zone.

Step 2: Discard outer gloves.

Step 3: Wash and rinse boots.

Step 4: Decontaminate equipment with disposable wetted rags. Place disposables in receptacles.

Step 5: Remove Tyvek. Place disposables in receptacles.

Step 6: Remove, wash, rinse, and sanitize respirator (if used).

Step 7: Discard inner gloves.

Step 8: Enter support zone.

Step 9: Wash hands and face.

Step 10: Workers should shower in the Project office trailer or immediately upon returning home.

7.2 EMERGENCY DECONTAMINATION

In case of an emergency, gross decontamination procedures will be implemented as rapidly as possible. Portable eye washes will be available in the first-aid kits maintained for each command post (i.e., van or trailer) located within the field support zone. Portable water sprayers will be available in all contamination reduction zones. If a life-threatening injury occurs that results in the individual becoming highly contaminated, and the injured individual cannot undergo decontamination procedures without incurring additional injuries or risk, the

individual will be transported wrapped in plastic sheeting. The medical facility will be: 1) informed that the injured individual has not been decontaminated and, 2) given information regarding the most probable contaminants.

7.3 RESPIRATOR DECONTAMINATION

Certain parts of contaminated respirators, such as the harness assembly or cloth components, are difficult to decontaminate. If grossly contaminated, these parts will be discarded. Rubber components will be soaked in soap and water and scrubbed with a brush. Respirators will be sanitized by rinsing them in a detergent solution followed by several clear rinses, before hanging them to dry.

Each person will be responsible for decontaminating their own respirator at the end of each day of use, and will be trained in respirator maintenance as part of the health and safety training program.

7.4 SAMPLING EQUIPMENT DECONTAMINATION

Sampling equipment will be decontaminated prior to, and at the end of, sampling activities. Sampling equipment decontamination includes a tap water rinse, an Alconox wash, another tap water rinse, and a final rinse with distilled water. Sampling equipment used outside the refuse disposal area will be decontaminated primarily to prevent cross-contamination, since soil and water in these areas are considered non-hazardous.

7.5 HEAVY EQUIPMENT DECONTAMINATION

Drilling equipment, and heavy equipment used for intrusive activities within refuse disposal area, will be decontaminated at the project support zone. As described above for sampling equipment, decontamination of drilling equipment is primarily to prevent cross-contamination between borings. Particular care will be taken in decontaminating heavy equipment parts that have come into direct contact with contaminants.

For wet decontamination procedures, high-pressure hot water cleaning will be used. Physical scrubbing with disposable brushes will be used when necessary to loosen materials.

The equipment decontamination area will be established downwind of field workers, if possible. Workers should stand as far away from the steam plumes as possible, as steam will tend to entrain potentially contaminated particulates.

7.6 DISPOSAL OF CONTAMINATED FLUIDS AND MATERIALS

All equipment and materials used for decontamination of personal protection will be cleaned or collected for appropriate disposal. All non-disposable clothing and equipment will be decontaminated. Disposables will be containerized. Equipment decontamination water, drilling water, and well purge water will be screened for organic vapors by passing a PID over the water's surface. If readings above background are detected, air will be bubbled through the water to remove residual volatile organics. Once the residual volatile organics have been removed, the water will be considered non-hazardous and disposed of at the work station.

Soil cuttings from the refuse disposal area will be disposed of in the refuse disposal area. Soil cuttings from outside this area will be screened for organic vapors in a manner similar to that described above for water. If readings above background are detected, the cuttings will be disposed of in the refuse disposal area. Otherwise, cuttings will be considered non-hazardous and may be disposed of at the work site, if appropriate, or in the refuse disposal area.

7.7 HOUSEKEEPING

Work areas will be kept clean and orderly. Ordinary refuse will be placed in suitable trash containers. Extraneous materials will be minimized within the exclusion zone (if applicable) as this increases the decontamination load and introduces possibilities for cross-contamination.

8.0 SAFETY RULES AND PROCEDURES

Safety is the responsibility of every individual involved with the Project. Whether in the office or field, properly followed procedures are essential for personal safety and to minimize lost time due to injuries or accidents involving equipment.

8.1 OVERALL SAFETY RULES

All personnel working in contaminated or potentially contaminated environments onsite will follow these rules and procedures:

- All personnel must comply with established safety procedures. Any employee who does not comply with any provision of this Health and Safety Plan may be immediately dismissed.
- Working under the influence of intoxicants, narcotics, or controlled substances is prohibited.
- Personnel taking prescription medicine should inform the Site Safety Officer/Field Coordinator if the medication is suspected to impair the worker's abilities, and if the medication must be taken at specific times during the day. Personnel may not take medicine in areas other than the support zone.
- Only properly trained and licensed drillers or driller's assistants will be allowed to climb or stand on drilling machinery, unless otherwise authorized by the Site Safety Officer/Field Coordinator. Other individuals (i.e., samplers and air monitoring personnel) will stand at a safe distance from the drill rig when it is operating. All personnel should remain alert and prepared to avoid moving equipment.
- Long hair must be tied back and contained inside a hard hat when working around moving machinery.
- Special care should be taken around drill rigs, compressors, and pumps, as protective clothing, fingers, or hair can be caught in moving parts. Also, machinery such as the compressor and generator may become extremely hot during use.
- Ear plugs should be used when working around loud machinery and when reduced hearing would not present a hazard (i.e., well development, and purging).
- Eating, drinking, chewing gum or tobacco, smoking, or any practice that increases the probability of hand-to-mouth transfer and ingestion of material is prohibited in the exclusion and industrial work zones.
- Smoking is allowed in designated areas of the support zone only.

- Meals will be eaten only within the support zone.
- Whenever possible, field team activities will be staged upwind of the drill rig and monitoring wells. The air rotary drill cutting outlet will be placed as far downwind from field workers as possible.
- Whenever possible, walking through puddles, mud, or across any discolored ground surface in the refuse disposal area or buffer zone is to be avoided. If work is to be performed inside the refuse disposal area, kneeling, leaning, sitting, or placing equipment on potentially contaminated drums, containers, vehicles, or the ground is prohibited.
- Care will be exercised when proceeding on foot through uneven terrain, and workers should remain alert as rattlesnakes are sometimes found in the area.
- Exchange of personal protective equipment will not be allowed.
- If any physical discomfort is experienced (abnormalities, light-headedness), immediately stop work, tell your co-workers, and leave the exclusion zone together.
- If any personal protective equipment fails, proceed immediately to the contamination reduction zone.
- At least two persons must be present in the exclusion zone at all times while it is occupied.

8.2 BEFORE LEAVING THE PROJECT OFFICE TRAILER

- Prior to leaving the Project office trailer, review Project information updates. These will provide important information concerning:
  - Expected hazards
  - Special conditions
  - Sampling procedures
  - Location of phone
  - Emergency medical information
  - Level of personal protection required
- Finish eating and extinguish cigarettes
- Attend safety briefing and worker question-and-answer period
- Check safety gear and equipment.

8.3 BEFORE ENTERING THE EXCLUSION ZONE

- Prior to entering the exclusion zone, place sample containers in field sample carrier
- Check location of portable first-aid kit, two-way radio, fire extinguisher, and water supply
- Conduct daily inspection of primary personal safety equipment for damage or wear, and replace or repair faulty equipment before re-entering the exclusion zone. Workers will assist each other in this inspection.
- Lay out and check alternate safety gear (first-aid kit, and extra clothing) daily for tears or malfunctions. Immediately repair or replace any damaged or missing gear or equipment.

9.0 EMERGENCY RESPONSE PROCEDURES

9.1 EMERGENCY COMMUNICATIONS

9.1.1 Location of Nearest Phone

A telephone will be located in the support zone at the Project office trailer. Numbers of emergency facilities and personnel will be located adjacent to the telephone.

9.1.2 Air Horn

An air horn will be located in each vehicle and at the Project office trailer, and will be used in the following manner:

Blasts	Meaning
1 long (L)	Evacuate zone immediately.
2 short (S)	Localized problem (not dangerous to workers). Workers move to contamination reduction zone for further instructions.
L/S/L/S	Need help at work location.
2 L	All clear. Resume work.

9.1.3 Two-Way Radios

Portable two-way radios or cellular telephones will be used at each field team location to communicate with the Project office trailer and other field team members.

9.1.4 Wind Direction Indicators

Wind direction indicators will be located at each work area. In an emergency situation, workers should check the wind direction indicator and then evacuate in the upwind direction.

9.1.5 Hand Signals

Hand signals will be established and standardized among all workers. Each worker will immediately inform co-workers of dangerous situations. The following hand signals will be used by team members:

Signal	Meaning
Thumbs up	Okay
Thumbs down	Not okay
Hands on Waist	Exit exclusion zone
Hands on Throat	Cannot breath
Rotating hands above head	Need help
Rotating hands to the side	Situation under control

9.2 ONSITE EMERGENCY EQUIPMENT

An Industrial First-Aid Kit, including a description of CPR and other emergency first aid, a portable air horn, and an eyewash kit will accompany each field vehicle.

9.3 OFFSITE EMERGENCY SERVICES

Phone numbers for offsite emergency services are listed inside the front cover page of this Plan. Copies of the emergency numbers will be located in each vehicle and at the Project office trailer.

9.4 NON-LIFE THREATENING INJURIES

In emergency situations that are not life-threatening (e.g., a broken leg), some decontamination procedures may be modified according to the specific circumstances. The victim should be moved outside the exclusion zone and outer protective clothing should be removed, if doing so would not cause delays or aggravate the injury. Respirators should only be removed: 1) if the victim has stopped breathing, or 2) after the victim has been removed from a breathing hazard area. Normal decontamination procedures should be followed when possible.

Bodily injuries that occur as a result of an accident during operations will be handled in the following manner:

- The victim will be moved outside of the exclusion zone and will be administered to by an individual who holds current first-aid and/or CPR certifications utilizing the emergency equipment onsite (Project office trailer or field vehicles).
- The local first-aid squad/rescue unit, a local hospital, and the Site Safety Officer/Field Coordinator will be notified depending on the nature of the emergency.

9.5 EVACUATION

The Site Safety Officer/Field Coordinator will be responsible for determining if circumstances exist that require re-evaluation and/or evacuation, and should always assume worst-case conditions until proven otherwise. Specific evacuation procedures and warning signs and signals will be covered in the health and safety training session prior to beginning work. Two levels of evacuation have been considered: 1) withdrawal from the immediate work area onsite, and 2) evacuation of the surrounding area.

9.5.1 Work Area

Withdrawal to a safe upwind location will be required under the following circumstances:

- Detection of volatile organics and/or toxic gases at concentrations above action levels for the level of protection being worn (see Section 5.1)
- Occurrence of a minor accident – field operations will resume after first-aid and decontamination procedures have been administered
- Malfunction or failure of protective equipment, clothing, or respirator.

9.5.2 Surrounding Area

There are no foreseeable conditions, based on current knowledge, that would require evacuation of the surrounding area. The Site Safety Officer/Field Coordinator will be responsible for determining if circumstances exist for area-wide evacuation, and should always assume worst-case conditions until proven otherwise. Fire and police departments must be contacted. A list of emergency response individuals familiar with Project work, including addresses and telephone numbers (inside cover page), will be located at the Project office trailer, and will be carried by the Site Safety Officer/Field Coordinator. If evacuation is necessary, it will be implemented with the assistance of these emergency response personnel.

9.6 ACCIDENT/INCIDENT REPORTING PROCEDURES

Procedures for reporting accidents/incidents are listed below. They will be performed in the order indicated.

(1) Call appropriate emergency services numbers (ambulance, fire, etc.). Provide information specified on page 1 of this Health and Safety Plan.

(2) The Site Safety Officer/Field Coordinator will complete a written accident/ incident report using Form 9.1, within 24 hours, sending copies to the persons listed below:

Distribution of Accident/Incident Reports:

Project Manager

Spokane County Utilities District Project Manager

The information provided in the "Employee Exposure/Injury Incident Report" is not to be released under any circumstances to parties other than those listed in this section, bona fide emergency response team members, or appropriate regulatory agency personnel.

FORM 9.1
EMPLOYEE EXPOSURE/INJURY INCIDENT REPORT
(Use additional page if necessary)

Date: _____ Time: _____

Name: _____ Employer: _____

Site Name and Location: _____

Site Weather (clear, rain, snow, etc.): _____

_____

Nature of Illness/Injury: _____

_____

_____

Symptoms: _____

Action Taken: Rest _____ First Aid _____ Medical _____

Transported by: _____

Witnessed by: _____

Hospital's Name: _____

Treatment: _____

Comments: _____

_____

_____

What was the person doing at the time of the accident/incident? _____

_____

_____

Personal Protective Equipment Worn: _____

_____

_____

Cause of Accident/Incident: _____

_____

_____

What immediate action was taken to prevent recurrence: _____

_____

_____

Additional Comments:

Employee's Signature: _____ Date

Supervisor's Signature _____ Date

Site Safety Officer/Field Coordinator Signature

_____ Date

Distribution: 1) Project Manager, 2) Spokane County Utilities District Project Manager

10.0 TRAINING

All personnel performing well construction or sampling tasks, intrusive tasks within the refuse disposal area or intrusive tasks in other areas where health and safety monitoring indicate personnel protection above Level D is required, shall have completed formal training that complies with 29 CFR 1910.120 and WAC 296-62-3040 (certificates of successful completion of training will be maintained in onsite job files), and shall verify on-the-job training for those tasks they are assigned to perform. All operations will be reviewed and all unfamiliar operations will be rehearsed prior to performing the actual procedure. Training will be conducted by a qualified safety professional.

Orientation training will be held prior to beginning drilling or intrusive work within the refuse disposal area. The initial training will be supplemented, as necessary, in subsequent safety meetings. Orientation training will include:

- Health effects and hazards of the chemicals identified or suspected to be present.
- Personal protection requirements.
- Personal hygiene (beards, etc.).
- Use, care, maintenance, and fitting of personal protective equipment, including air purifying respirators. Training in respiratory equipment use will conform to ANSI Z88.2(1980) and 29 CFR 1910.134, which establishes the necessity, effectiveness, and limitations of respiratory equipment.
- Decontamination procedures.
- Accepted practices for entry, exit, and activities within specified areas, including prohibition of food consumption and smoking within the exclusion and contamination reduction zones.
- Emergency response procedures as specified in Section 9.0.
- Review and assessment of equipment.
- Review of job descriptions and assignments.
- Medical requirements.

Written documentation (Form 10.1) of training will be required from all Project personnel and will be maintained by the Site Safety Officer/Field Coordinator.

A Health and Safety Logbook will be maintained for recording events relating to worker health and safety. Issues discussed during safety briefings and any pertinent activities or conversations will be recorded in the log book.

FORM 10.1

TRAINING RECORD

Employee Name: _____

Address: _____

Phone: _____

Company: _____

Training:

(List all successfully completed Health and Safety Training)

Date	Location	Trainer	Hrs.	Title/Subject Matter

I certify that I have successfully completed the training programs listed above.

Signature: _____

Date: _____

11.0 ROUTINE HEALTH CARE AND MONITORING

A baseline medical evaluation and an annual update exam will be required for all contractors and subcontractors providing drilling services, performing intrusive activities in the refuse disposal area, or intrusive tasks in other areas where health and safety monitoring indicate personnel protection above Level D is required. Annual exams must be maintained throughout the Project for these personnel. Follow-up examinations are appropriate if exposures are known or suspected to have occurred. Documentation of medical evaluations (including medical clearance for respirator use) will be maintained by the Site Safety Officer/Field Coordinator for all workers performing intrusive activities in the refuse disposal area.

12.0 REFERENCES

American Conference of Governmental Industrial Hygienists. 1990. Threshold Limit Values and Biological Exposure Indices for 1990-1991.

American National Standards Institute (ANSI) 1980. Practices for Respiratory Protection, ANSI Z88.2.

American Red Cross. 1987. Student Workbook for Multimedia Standard First Aid.

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Landau Associates, Inc. 1991. Final Phase I Engineering Report, Colbert Landfill Remedial Design/Remedial Action, Spokane County, Washington. Prepared for Spokane County, Washington. December 30, 1991.

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National Oceanic and Atmospheric Administration (NOAA). 1985. Summary of Day—First Order TD 3210. Entire Period of Record through 1985 for Spokane, Washington.

NIOSH/OSHA/USCG/EPA. 1985. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (October).

Occupational Safety and Health Administration, U.S. Department of Labor Code of Federal Regulations 29, Part 1910.134, Subpart I - Personal Protective Equipment.

Sax, Irvine. 1989. Dangerous Properties of Industrial Materials, Fifth Edition.

Sittig, Marshall. 1985. Handbook of Toxic and Hazardous Chemicals and Carcinogens, Second Edition.

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U.S. Department of Health and Human Services. 1985. National Institute for Occupational Safety and Health, Occupational Safety and Health Guidance Manual for Superfund Activities, (October).

U.S. Department of Health and Human Services. 1990. NIOSH Pocket Guide to Chemical Hazards, (June).

U.S. Department of Labor, Occupational Safety and Health Administration, Federal Register: 29 CFR Part 1910, Hazardous Waste Operations and Emergency Response, Final Rule, 6 March 1989.

U.S. District Court, Eastern District of Washington. 1988. Consent Decree No. C-89-033-RJM. The Washington State Department of Ecology and The United States of America on Behalf of the U.S. Environmental Protection Agency (Plaintiffs) v. County of Spokane and Key Tronic Corporation (defendants). 28 February 1988.

U.S. Environmental Protection Agency. 1984. Standard Operating Safety Guides. Environmental Response Branch, Hazardous Response Support Division (November).

U.S. Environmental Protection Agency. 1987. Record of Decision, Decision Summary, and Responsiveness Summary for Interim Final Remedial Action, Colbert Landfill Site, Colbert, Washington, (September).

U.S. Environmental Protection Agency. 1991. Health Effects Assessment Summary Tables, Annual FY-1991, Environmental Criteria and Assessments Office, OERR 9200.6-303 (91-1).

APPENDIX C

Prevailing Wage Schedule

STATE OF WASHINGTON

DEPARTMENT OF LABOR AND INDUSTRIES

General Administration Building • Olympia, Washington 98504-4401

ESAC DIVISION - TELEPHONE (206) 956-5335
PO BOX 44540, OLYMPIA, WASHINGTON 98504-4540

February 26, 1993

TO: All Contractors, Public Agencies and Other Interested Parties

FROM: Jim P. Christensen
Acting Industrial Statistician

SUBJECT: **PREVAILING WAGES FOR PUBLIC WORKS**

KING AND SAN JUAN COUNTY LISTINGS If you received the listing of prevailing wage rates for King County or for San Juan County, the date on your listing may be incorrect. The date should be 3/3/93, not 3/3/92.

HAZARDOUS MATERIAL DISPOSAL Prevailing wage rates for Hazardous Material Disposal have been eliminated. Please remove those rates from your records, effective March 3, 1993. The appropriate prevailing wage rates for those projects are the rates found under regular construction trades. For example, prevailing wage rates for truck drivers hauling hazardous materials can be found under "Truck Drivers," rates for laborers handling these materials are found under "Laborers" and rates for the operation of power equipment on these projects are found under "Power Equipment Operators."

POWER LINE CLEARANCE TREE TRIMMERS Prevailing wage rates for Power Line Clearance Tree Trimmers have been revised effective March 3, 1993. The rates you recently received are incorrect. Please amend your records to reflect the revised rates shown below.

SUBCLASSIFICATION	HOURLY WAGE	HOURLY BENEFITS
JOURNEY LEVEL IN CHARGE	18.95	4.41
TREE TRIMMER	16.36	4.32
CHIPPER OPERATOR	13.09	3.51
SPRAY PERSON	13.09	3.51
TREE TRIMMER GROUND PERSON	11.30	3.45

Overtime Code - 4A
Holiday Code - 5A

Wage Rates Request Form

FED. RATES ☐ YES ST. RATES ☐ YES

SR _____

TITLE _____

_____

JOB NO.: _____

REVIEWER: _____

DATE: _____

WORK ORDER: _____

EFF. DATE: _____

01 ☐	ADAMS	17 ☐	DOUGLAS	33 ☐	KING	49 ☐	PACIFIC	65 ☐	STEVENS
03 ☐	ASOTIN	19 ☐	FERRY	35 ☐	KITSAP	51 ☐	PEND OREILLE	67 ☐	THURSTON
05 ☐	BENTON	21 ☐	FRANKLIN	37 ☐	KITTITAS	53 ☐	PIERCE	69 ☐	WAHKIAKUM
07 ☐	CHELAN	23 ☐	GARFIELD	39 ☐	KLICKITAT	55 ☐	SAN JUAN	71 ☐	WALLA WALLA
09 ☐	CLALLAM	25 ☐	GRANT	41 ☐	LEWIS	57 ☐	SKAGIT	73 ☐	WHATCOM
11 ☐	CLARK	27 ☐	GRAYS HARBOR	43 ☐	LINCOLN	59 ☐	SKAMANIA	75 ☐	WHITMAN
13 ☐	COLUMBIA	29 ☐	ISLAND	45 ☐	MASON	61 ☐	SNOHOMISH	77 ☐	YAKIMA
15 ☐	COWLITZ	31 ☐	JEFFERSON	47 ☐	OKANOGAN	63 ☐	SPOKANE	99 ☐	ALL (Except those marked)

OCCUPATIONS FOR STATE WAGE RATES FOR ALL CONSTRUCTION
OCCUPATIONS FOR FEDERAL WAGE RATES FOR HIGHWAY CONSTRUCTION

010 ☐ Heat and Frost Insulators and Asbestos Workers
020 ☐ Certified Asbestos Abatement Workers
030 ☐ Boilermakers
050 ☐ Bricklayers & Marble Masons
065 ☐ Cabinet Makers
070 ☐ Carpenters
090 ☐ Cement Masons/Finishers
100 ☐ Communication Tech.
110 ☐ Divers & Tenders
130 ☐ Dredging Workers
150 ☐ Drywall Finishers
170 ☐ Electricians
190 ☐ Lineman - Powerline Construction (Both Required)
230 ☐ Elevator Constructors
250 ☐ Fence Erectors & Laborers
260 ☐ Flaggers
270 ☐ Glaziers
290 ☐ Inland Boatman
310 ☐ Insulation Applicators (Ceiling and Wall)
330 ☐ Ironworkers
350 ☐ Laborers
360 ☐ Laborers (Sewer & Water Const.)
370 ☐ Landscape Construction
390 ☐ Lathers
430 ☐ Mason Tenders, Hod Carriers & Mortarmen
440 ☐ Millwright & Machine Erectors
450 ☐ Painters
480 ☐ Piledrivers
490 ☐ Plasterers
510 ☐ Plasterer Tenders
530 ☐ Plumbers & Pipefitters
570 ☐ Power Equip. Op.
580 ☐ Power Equip. Op. (Sewer & Water Const.)
590 ☐ Refrig. & Air Conditioning Mechanics
610 ☐ Roofer & Waterproofers
620 ☐ Shipbuilders & Ship Repairers
630 ☐ Sheetmetal Workers
635 ☐ Sign Men - Electrical
640 ☐ Sign Hangers & Painters & Constr. Men
650 ☐ Soft Floor Layers
670 ☐ Sprinkler Fitters-Fire Prevention
710 ☐ Sun Screen Installers & Window Tinters
720 ☐ Surveyors
730 ☐ Teamsters
750 ☐ Telephone Line Const. (Outside - Pole & Underground)
770 ☐ Terrazzo Workers & Tile Setters
790 ☐ Tile, Marble & Terrazzo Helpers
820 ☐ Traffic Control Stripers
830 ☐ Well Drillers and Irrigation Pump Installers

035 [ ] METAL FABRICATION (IN SHOP)

160 [ ] ELECTRONIC TECHNICIANS & ELECTRONIC SPECIALISTS

240 [ ] FABRICATED PRECAST CONCRETE PRODUCTS

280 [ ] HAZARDOUS MATERIAL DISPOSAL

* NOTE: See instructions on reverse side for requesting Federal Wage Rates for contracts that include building contruction.

DOT 221-018A Revised 4/91

SIDE 1 OF 2

FED RATES YES

OCCUPATIONS FOR FEDERAL WAGE RATES FOR BUILDING CONSTRUCTION
* Except within counties 5, 21 and 77.

850	☐	Asbestos Workers (BLDG.)	907	☐	Lineman (BLDG.)
855	☐	Boilermakers (BLDG.)	908	☐	Millwrights (BLDG.)
860	☐	Bricklayers; Marble Setters (BLDG.)	910	☐	Painters (BLDG.)
865	☐	Carpenters (BLDG.)	915	☐	Plasterers (BLDG.)
870	☐	Cement Masons (BLDG.)	920	☐	Plumbers (BLDG.)
871	☐	Communications Tech. (BLDG.)	925	☐	Roofers (BLDG.)
872	☐	Drywall Finishers (BLDG.)	930	☐	Sheet Metal Workers (BLDG.)
875	☐	Electricians (BLDG.)	935	☐	Soft Floor Layers (BLDG.)
880	☐	Electronic Technicians (BLDG.)	940	☐	Sprinkler Fitters (BLDG.)
885	☐	Elevator Mechanics (BLDG.)	945	☐	Terrazzo Workers; Tile Setters (BLDG.)
890	☐	Glaziers (BLDG.)	950	☐	Tile, Marble, & Terrazzo Finishers (BLDG.)
895	☐	Insulation Applicators (BLDG.)	955	☐	Landscape Construction (BLDG.)
900	☐	Ironworkers (BLDG.)	960	☐	Laborers (BLDG.)
905	☐	Lathers (BLDG.)	965	☐	Power Equipment Operators (BLDG.)
			970	☐	Truck Drivers (BLDG.)

FEDERAL WAGE RATES REQUEST INSTRUCTIONS:

1. When the contract includes federally funded highway and building construction, request the State and Federal rates on front of this form as well as the above Federal rates.

2. When the contract includes only federally funded building construction, request state rates on the front of this form as well as the above Federal rates.

3. When the contract includes building construction in the Counties EXCEPTED above, the Federal rates are obtained by submitting a 308 form to the U.S.D.O.L., Washington DC. Request state rates from the front of this form.

DOT [illegible] Revised 4/91

SIDE 2 OF 2

STATE OF WASHINGTON

DEPARTMENT OF LABOR AND INDUSTRIES

General Administration Building • Olympia, Washington 98504-4401
ESAC DIVISION - TELEPHONE (206) 956-5335
PO BOX 44540, OLYMPIA, WASHINGTON 98504-4540

WASHINGTON STATE PREVAILING WAGE RATES
SPOKANE COUNTY
EFFECTIVE 03-03-93

* *

(SEE BENEFIT CODE KEY)

CLASSIFICATION	HOURLY WAGE RATE	HOURLY FRINGE BENEFITS	OVER TIME CODE	HOLIDAY CODE	NOTE
**** ASBESTOS ABATEMENT, CERTIFIED**					
Certified Asbestos Abatement Worker	15.84	3.57	1G	5D	
**** BOILERMAKERS**					
Boilermaker	22.07	6.16	1R	5N	
**** BRICKLAYERS AND MARBLE MASONS**					
All Classifications	19.06	4.71	1B	5A	
**** BUILDING SERVICE EMPLOYEES**					
Janitor	4.95	0.00	1	5T	8C
Traveling Waxer,Shampooer	5.20	0.00	1	5T	8C
Window Cleaners	5.45	0.00	1	5T	8C
**** CABINET MAKERS**					
Cabinet Maker - In Shop	9.72	0.00	1		
**** CARPENTERS**					
Carpenter	18.20	4.13	1K	5A	
Piledriver	18.35	4.13	1K	5A	
Millwright	18.70	4.13	1K	5A	
**** CEMENT MASONS**					
All Classifications	17.79	4.20	1N	5D	
**** COMMUNICATION TECHNICIANS**					
Communication Technician	12.07	0.00	1		
Electronic Technician	12.07	0.00	1		
**** DIVERS AND TENDERS**					
Tenders	21.42	4.13	1K	5A	
Divers - 0 to 50 ft	43.90	4.13	1K	5A	8B

In addition to the hourly wage and fringe benefits,
the following depth premiums apply to depths of fifty feet or more

Over 50' to 100' - $1.00 per foot for each foot over 50 feet
Over 100' to 175' - $2.25 per foot for each foot over 100 feet
Over 175' to 250' - $5.50 per foot for each foot over 175 feet

**** DREDGE WORKERS**					
Assistant Engineer	19.48	4.75	1B	5I	
Oiler	19.14	4.75	1B	5I	
Leverman, Hydraulic	19.90	4.75	1B	5I	
Mates	19.48	4.75	1B	5I	
Boatmen	19.48	4.75	1B	5I	
Assistant Mate (Deckhand)	19.14	4.75	1B	5I	
Engineer Welder	19.53	4.75	1B	5I	

CLASSIFICATION	HOURLY WAGE RATE	HOURLY FRINGE BENEFITS	(SEE BENEFIT CODE KEY) OVER TIME CODE	HOLIDAY CODE	NOTE CODE
** DRYWALL FINISHERS					
Drywall Taper	14.88	2.70	1		
** ELECTRICAL FIXTURE MAINTENANCE WORKERS					
Journey Level	6.50	.19	1		
** ELECTRICIANS					
All Classifications	17.34	0.00	1		
** ELECTRICIANS - MOTOR SHOP					
Craftsperson	13.95	1.42	2A	6C	
Journey Level	13.29	1.40	2A	6C	
** ELECTRICIANS - POWERLINE CONSTRUCTION					
Journey Level Line Electrician	21.69	5.51	4A	5A	8E
Cable Splicer	24.01	5.59	4A	5A	8E
Certified Line Electrician Welder	21.69	5.51	4A	5A	8E
Pole Sprayer	21.69	5.51	4A	5A	8E
Heavy Line Equipment Worker	21.69	5.51	4A	5A	8E
Equipment Worker	18.71	4.40	4A	5A	8E
Head Grounds Person	16.37	4.32	4A	5A	8E
Powder Person	16.37	4.32	4A	5A	8E
Jackhammer Operator	16.37	4.32	4A	5A	8E
Grounds Person	15.39	4.29	4A	5A	8E
** ELEVATOR CONSTRUCTORS					
Mechanic in Charge	23.75	6.52	4A	6Q	
Mechanic	21.11	6.37	4A	6Q	
Constructor	14.78	6.02	4A	6Q	
Probationary Constructor	10.56	0.00	4A	6Q	
** FABRICATED PRE-CAST CONCRETE PRODUCTS					
CRAFTSMAN	11.30	1.90	2B	6D	8S
PRODUCTION WORKER	8.90	1.90	2B	6D	8S
CLEANUP WORKER	6.15	1.90	2B	6D	8S
** FENCE ERECTORS AND FENCE LABORERS					
Fence Erector	13.80	0.00	1		
Fence Laborer	11.60	0.00	1		
** FLAGGERS					
Flagger	13.92	3.57	1G	5D	
** GLAZIERS					
Journey Level	13.53	0.00	1		
** GREENHOUSE ERECTORS					
Greenhouse Erector	8.00	0.00	1		
** HAZARDOUS MATERIAL DISPOSAL					
Equipment Operator	11.00	2.75	1		
Material Worker	10.10	2.75	1		
Truck Driver	11.39	3.11	1		
Welder Mechanic	10.90	2.75	1		
** HEAT AND FROST INSULATORS (ASBESTOS WORKERS)					
Mechanic	18.44	0.00	1		
** HEATING EQUIPMENT MECHANICS					
Journey Level	16.04	2.41	1J	5A	
** HOD CARRIERS AND MASON TENDERS					
Journey Level	16.87	3.57	1B	5A	

CLASSIFICATION	HOURLY WAGE RATE	HOURLY FRINGE BENEFITS	(SEE BENEFIT CODE KEY) OVER TIME CODE	HOLIDAY CODE	NOTE CODE
** INDUSTRIAL ENGINE MECHANICS					
Industrial Engine Mech.	12.86	2.79	1		
** INDUSTRIAL VACUUM POWER CLEANER					
Journey-level	7.90	1.17	1		
** INSPECTION, CLEANING, SEALING OF SEWER AND WATER SYSTEMS					
Technician	6.25	0.00	1		
Cleaner Operator, Foamer Operator	8.25	1.48	1		
TV Truck Operator	8.75	1.78	1		
Grout Truck Operator	9.50	1.98	1		
Head Operator	10.50	2.28	1		
** INSULATION APPLICATORS					
Journey Level	17.07	0.00	1		
** IRONWORKERS					
All Classifications	19.96	7.46	1B	5A	
** LABORERS					
Asphalt Raker	16.09	3.57	1G	5D	
Asphalt Roller, Walking	16.09	3.57	1G	5D	
Brush Hog Feeder	15.84	3.57	1G	5D	
Brush Machine	16.34	3.57	1G	5D	
Cassion Worker	16.34	3.57	1G	5D	
Carpenter Tender	15.84	3.57	1G	5D	
Cement Finisher Tender	16.09	3.57	1G	5D	
Cement Handler	15.84	3.57	1G	5D	
Chain Saw Operator & Faller	16.34	3.57	1G	5D	
Concrete Crewman	15.84	3.57	1G	5D	
Concrete Saw, Walking	16.09	3.57	1G	5D	
Concrete Signalman	15.84	3.57	1G	5D	
Concrete Stack	16.34	3.57	1G	5D	
Crusher Feeder	15.84	3.57	1G	5D	
Demolition	15.84	3.57	1G	5D	
Demolition Torch	16.09	3.57	1G	5D	
Dope Pot Fireman	16.09	3.57	1G	5D	
Drill, Air Tract	16.34	3.57	1G	5D	
Drill With Dual Masts	16.59	3.57	1G	5D	
Driller Helper, When Required to Move and Position Machine	16.09	3.57	1G	5D	
Drills, Wagon	16.09	3.57	1G	5D	
Form Cleaning Machine Feeder, Stacker	15.84	3.57	1G	5D	
Form Setter, Paving	16.09	3.57	1G	5D	
General Laborer	15.84	3.57	1G	5D	
Grade Checker	15.84	3.57	1G	5D	
Grade Checker, Using Level	16.09	3.57	1G	5D	
Grout Machine Header Tender	15.84	3.57	1G	5D	
Gunnite Nozzleman	16.34	3.57	1G	5D	
Hazardous Waste Laborer	15.84	3.57	1G	5D	
High Scaler	16.34	3.57	1G	5D	
Jackhammer	16.09	3.57	1G	5D	
Laser Beam Operator	16.34	3.57	1G	5D	
Miner, Class "A"	15.84	3.57	1G	5D	
Miner, Class "B"	16.09	3.57	1G	5D	
Miner, Class "C"	16.34	3.57	1G	5D	
Miner, Class "D"	16.59	3.57	1G	5D	
Monitor Operator, Air Track, or Similar	16.34	3.57	1G	5D	
Mortar Mixer	16.34	3.57	1G	5D	
Nipper	15.84	3.57	1G	5D	

WASHINGTON STATE PREVAILING WAGE RATES - EFFECTIVE 03-03-93
SPOKANE COUNTY

CLASSIFICATION	HOURLY WAGE RATE	HOURLY FRINGE BENEFITS	(SEE BENEFIT CODE KEY) OVER TIME CODE	HOLIDAY CODE	NOTE CODE
Nozzleman, to Include Jet Blasting	16.34	3.57	1G	5D	
Nozzleman, to Include Squeeze and Flow-Crete	16.09	3.57	1G	5D	
Nozzleman, Water, Air or Steam	16.09	3.57	1G	5D	
Pavement Breaker, Under 90 Lbs.	16.09	3.57	1G	5D	
Pavement Breaker, 90 Lbs. & Over	16.34	3.57	1G	5D	
Pipelayer, Corrugated Metal Culvert	16.09	3.57	1G	5D	
Pipelayer, Multi-Section	16.09	3.57	1G	5D	
Pipelayer, to Include Working Topman	16.34	3.57	1G	5D	
Pipe, Water Liner	16.09	3.57	1G	5D	
Pipewrapper	16.34	3.57	1G	5D	
Pot Tender	16.09	3.57	1G	5D	
Powderman	17.84	3.57	1G	5D	
Power Buggy Operator	16.09	3.57	1G	5D	
Power Tool Operator, Gas, Electric, Pneumatic	16.09	3.57	1G	5D	
Wheelbarrow, Power Driven	16.09	3.57	1G	5D	
Railroad Power Spiker or Puller, Dual Mobile	16.09	3.57	1G	5D	
Railroad Track Laborers	15.84	3.57	1G	5D	
Riprap Man	15.84	3.57	1G	5D	
Rodder & Spreader	16.09	3.57	1G	5D	
Scaffold Erector, Wood or Steel	15.84	3.57	1G	5D	
Stake Jumper	15.84	3.57	1G	5D	
Structural Mover	15.84	3.57	1G	5D	
Tailhoseman, Sandblast	15.84	3.57	1G	5D	
Tailhoseman, Water Nozzle	15.84	3.57	1G	5D	
Tampers	16.09	3.57	1G	5D	
Timber Bucker & Faller (By Hand)	15.84	3.57	1G	5D	
Trencher, Shawnee	16.09	3.57	1G	5D	
Truck Loader	15.84	3.57	1G	5D	
Tugger Operator	16.09	3.57	1G	5D	
Vibrators, All	16.34	3.57	1G	5D	
Welder, Electric, Manual or Automatic	16.59	3.57	1G	5D	
Well-Point Man	15.84	3.57	1G	5D	
Window Cleaner	13.92	3.57	1G	5D	
** LABORERS - UTILITIES CONSTRUCTION (SEE LABORERS)					
** LANDSCAPE CONSTRUCTION					
Irrigation Equipment Installers	6.28	0.00	1		
Irrigation & Landscape Equipment Operators	7.19	0.00	1		
Landscaping or Planting Laborers	6.54	0.00	1		
** LANDSCAPE MAINTENANCE					
Journey Level	8.30	0.00	1		
** LATHERS					
Journey Level	17.77	3.91	1K	5A	
** MACHINISTS (HYDROELECTRIC SITE WORK)					
Machinist	16.84	0.00	1		
** MATERIAL SUPPLIER - EQUIPMENT OPERATOR					
Operator	18.95	0.00	1		

CLASSIFICATION	HOURLY WAGE RATE	HOURLY FRINGE BENEFITS	(SEE BENEFIT CODE KEY) OVER TIME CODE	HOLIDAY CODE	NOTE CODE
** MATERIAL SUPPLIER - TRUCK DRIVER					
Transit Mix - Conventional	14.95	3.72	1	5T	
Transit Mix - Booster	15.10	3.72	1	5T	
Solo	14.90	3.72	1	5T	
Multi	15.10	3.72	1	5T	
Tractor-Trailer	15.00	3.72	1	5T	
** METAL FABRICATORS (IN SHOP)					
Fitter	12.59	0.00	1		
Welder	10.80	0.00	1		
Machine Operator	13.26	0.00	1		
Painter	10.27	0.00	1		
Laborer	7.98	0.00	1		
** PAINTERS					
Brush Painters, Paperhangers	16.65	2.95	1W	5A	
Spray Painters, Steel Painters, Steam Cleaning	17.15	2.95	1W	5A	
Bitumastic, Sandblasting, Bridges, Towers, Stacks, Steeples, Tanks on Legs	17.45	2.95	1W	5A	
T.V., Radio & Electrical Transmission Towers	18.15	2.95	1W	5A	
Application of Cold Tar Products	17.45	2.95	1W	5A	
** PLASTERERS					
Journey Level	17.87	4.20	1B	5A	
** PLAYGROUND AND PARK EQUIPMENT INSTALLERS					
Journey Level	6.54	0.00	1		
** PLUMBERS AND PIPEFITTERS					
All Classifications	21.76	0.00	1		
** POWER EQUIPMENT OPERATORS					
A-Frame Truck (Single Drum)	16.92	4.75	1N	5D	
A-Frame Truck (2 or More Drums)	17.47	4.75	1N	5D	
Asphalt Plant Operator	18.02	4.75	1N	5D	
Assistant Plant Fireman or Pugmixer	16.92	4.75	1N	5D	
Assistant Refrig. Plant (under 1000 Ton)	16.92	4.75	1N	5D	
Assistant Refrig. Plant & Chiller	17.47	4.75	1N	5D	
Automatic Subgrader (Ditches & Trimmers)	18.02	4.75	1N	5D	
Backfillers (Cleveland & Similar)	17.47	4.75	1N	5D	
Backhoe & Hoe Ram, under 3/4 yard	17.77	4.75	1N	5D	
Backhoe & Hoe Ram, 3/4 - 3 yds	18.02	4.75	1N	5D	
Backhoe, 3 yds & Over	18.27	4.75	1N	5D	
Batch Plant & Wet Mix, Single Unit	17.47	4.75	1N	5D	
Batch & Wet Mix, Multiple Units	18.02	4.75	1N	5D	
Batch Plant Over 4 Units	18.02	4.75	1N	5D	
Belt-Crete Conveyors With Power Pack	17.47	4.75	1N	5D	
Belt Finishing Machine	16.92	4.75	1N	5D	
Bending Machine	17.47	4.75	1N	5D	
Bit Grinders	16.62	4.75	1N	5D	
Blade (Motor Patrol & Attachments)	18.02	4.75	1N	5D	
Blade (Finish & Bluetop) (Automatic, CMI, ABC)	18.27	4.75	1N	5D	
Blower Operator (Cement)	16.92	4.75	1N	5D	
Boat Operators	16.12	4.75	1N	5D	
Bobcat	17.47	4.75	1N	5D	
Bolt Threading Machine	16.62	4.75	1N	5D	
Boom Cats (Side)	18.02	4.75	1N	5D	
Boring Machine (Earth)	17.47	4.75	1N	5D	
Boring Machine (Rock)	17.47	4.75	1N	5D	
Bump Cutter (Wayne, Saginau or Similar)	17.47	4.75	1N	5D	
Cableway Controller - Dispatcher	18.02	4.75	1N	5D	

CLASSIFICATION	HOURLY WAGE RATE	HOURLY FRINGE BENEFITS	(SEE BENEFIT CODE KEY) OVER TIME CODE	HOLIDAY CODE	NOTE CODE
Cableway Operators	18.27	4.75	1N	5D	
Canal Lining Machine - Concrete	17.47	4.75	1N	5D	
Cement Hog	16.92	4.75	1N	5D	
Chipper (Without Crane)	17.47	4.75	1N	5D	
Clamshell Operator (Under 3 yds)	18.02	4.75	1N	5D	
Clamshell Operator (3 yds & over)	18.27	4.75	1N	5D	
Cleaning & Doping Machine (Pipeline)	17.47	4.75	1N	5D	
Compressors (under 2000 CFM, gas, Diesel)	16.62	4.75	1N	5D	
Compressors (over 2000 CFM, 2 or more	16.92	4.75	1N	5D	
Concrete Pumps (Squeeze-Crete, Flow-Crete)	17.62	4.75	1N	5D	
Concrete Pump Boom Truck	18.02	4.75	1N	5D	
Concrete Slip Form Paver	18.02	4.75	1N	5D	
Concrete Saw (Multiple Cut	16.92	4.75	1N	5D	
Cranes 25 Tons & under	17.77	4.75	1N	5D	
Cranes over 25 Tons, to & including 45 Tons	18.02	4.75	1N	5D	
Cranes over 45 Tons, to & including 85 Tons	18.27	4.75	1N	5D	
Cranes, 85 Tons & Over And ALL Climbing, Rail & Tower	19.27	4.75	1N	5D	
Crusher Feederman	16.12	4.75	1N	5D	
Crusher, Grizzle & Screening Plant	18.02	4.75	1N	5D	
Deck Engineer	17.47	4.75	1N	5D	
Deck Hand	16.62	4.75	1N	5D	
Derricks & Stifflegs (Under 65 Tons)	17.77	4.75	1N	5D	
Derricks & Stifflegs (65 Tons & Over)	18.27	4.75	1N	5D	
Distributor Leverman	16.92	4.75	1N	5D	
Ditch Witch or Similar	16.92	4.75	1N	5D	
Dope Pots (Power Agitated)	16.92	4.75	1N	5D	
Dozer, Multiple Units With Single Blade	18.02	4.75	1N	5D	
Draglines (under 3 yds)	18.02	4.75	1N	5D	
Draglines (3 yds & Over)	18.27	4.75	1N	5D	
Drill Doctor	18.02	4.75	1N	5D	
Drillers Helper	16.62	4.75	1N	5D	
Drills (Churn, Core, Calyx or Diamond)	17.62	4.75	1N	5D	
Drilling Equipment (8" Bit & Over)	17.77	4.75	1N	5D	
Elevator Hoisting Materials	16.92	4.75	1N	5D	
Elevating Belt (Holland Type)	18.27	4.75	1N	5D	
Equipment Serviceman, Greaser and Oiler	17.62	4.75	1N	5D	
Fireman & Heater Tender	16.62	4.75	1N	5D	
Fork Lift or Lumber Stacker, Hydra-Lift	16.92	4.75	1N	5D	
Generator Plant Engineers (Diesel, Electric)	17.47	4.75	1N	5D	
Gin Trucks (Pipeline)	16.92	4.75	1N	5D	
Grade Checker	16.62	4.75	1N	5D	
Gunite Combination Mixer & Compressor	17.47	4.75	1N	5D	
H.D. Mechanic	18.02	4.75	1N	5D	
H.D. Welder	18.02	4.75	1N	5D	
Helicopter Pilot	19.27	4.75	1N	5D	
Helper, of H.D. Mechanic & H.D. Welder	16.12	4.75	1N	5D	
Hoe Ram	17.77	4.75	1N	5D	
Hoist, Single-Drum	16.92	4.75	1N	5D	
Hoist (2 or more drums or tower hoist)	17.62	4.75	1N	5D	
Hydro Seeder, Mulcher, Nozzleman	16.62	4.75	1N	5D	
Loaders (Bucker, Elevator & Conveyors)	16.92	4.75	1N	5D	
Loader, Belt (Kocal or Similar)	17.47	4.75	1N	5D	
Loader, Elevating Belt-type (Euclid, Barber)	17.47	4.75	1N	5D	
Loader, Elevating Grader Type (Dumor, Adams)	17.47	4.75	1N	5D	
Loaders: Overhead/Front-end under 4 yds	17.62	4.75	1N	5D	
Loaders: Overhead/Front-end 4 - 8 yds	18.02	4.75	1N	5D	
Loaders: Overhead/Front-end 8 - 10 yds	18.27	4.75	1N	5D	
Loaders: Overhead/Front-end 10 yds & Over	19.27	4.75	1N	5D	
Loader (360 Degrees Revolving Koehring)	18.27	4.75	1N	5D	
Locomotive Engineer	17.47	4.75	1N	5D	
Longitudinal Float	16.92	4.75	1N	5D	
Mixer (Portable-Concrete)	16.92	4.75	1N	5D	
Mixermobile	17.47	4.75	1N	5D	
Mucking Machine	17.47	4.75	1N	5D	
Oiler	16.12	4.75	1N	5D	
Oiler Driver & Cable Tender, Mucking Machine	16.62	4.75	1N	5D	
Pave or Curb Extruder Asphalt & Concrete	17.62	4.75	1N	5D	

CLASSIFICATION	HOURLY WAGE RATE	HOURLY FRINGE BENEFITS	(SEE BENEFIT CODE KEY) OVER TIME CODE	HOLIDAY CODE	NOTE CODE
Pavement Breaker, Hydrahammer & Similar	16.92	4.75	1N	5D	
Pavers (Asphalt or Concrete)	18.02	4.75	1N	5D	
Paving (Dual Drum)	17.77	4.75	1N	5D	
Paving Machine (Asphalt or Concrete)	18.02	4.75	1N	5D	
Piledriving Engineers	17.77	4.75	1N	5D	
Posthole Auger or Punch	17.47	4.75	1N	5D	
Power Broom	16.92	4.75	1N	5D	
Probe Tender (Roto-Mill)	16.92	4.75	1N	5D	
Pump (Grout or Jet)	17.47	4.75	1N	5D	
Pump Operator (Water)	16.62	4.75	1N	5D	
Quad-Track or Similar Equipment	18.02	4.75	1N	5D	
Railroad Ballast Regulation Self-propelled	16.92	4.75	1N	5D	
Railroad Power Tamper Self-propelled	16.92	4.75	1N	5D	
Railroad Tamper Jack, Self-propelled	16.92	4.75	1N	5D	
Railroad Track Liner Operator (Self-Propelled)	17.77	4.75	1N	5D	
Refrigeration Plant Engineers (Under 1000 Ton)	17.62	4.75	1N	5D	
Refrigeration Plant Engineer (1000 Tons & Over)	17.77	4.75	1N	5D	
Rollers, All types on Subgrade (Farm Type)	16.62	4.75	1N	5D	
Roller Operator (Finishing Pavement)	18.02	4.75	1N	5D	
Roto-Mill Pavement Profiler	18.02	4.75	1N	5D	
Scraper, Bagley or Stationary	16.92	4.75	1N	5D	
Scrapers, Rubber-tired (one motor with one scraper, under 40 yds)	18.02	4.75	1N	5D	
Scrapers, Rubber-tired Multi-Engine Power	18.02	4.75	1N	5D	
Scrapers, Rubber-tired One Motor With One Scraper (40 yds & Over)	18.02	4.75	1N	5D	
Scrapers, Rubber-tired Multi-Engine Power With One Scraper, Push Pull Or Help Mate In Use	18.02	4.75	1N	5D	
Scrapers, Rubber-tired Multi-Engine With Two Scrapers	18.27	4.75	1N	5D	
Scrapers, Rubber-tired Multi-Engine With Three Or More Scrapers	18.02	4.75	1N	5D	
Screed Operator	18.02	4.75	1N	5D	
Shovels, Under 3 yds.	18.27	4.75	1N	5D	
Shovels, 3 yds & Over	17.77	4.75	1N	5D	
Signalmen (Whirleys, Highline, Hammerheads)	17.62	4.75	1N	5D	
Skidder, Rubber-tired (R/T, With or Without Attachments)	17.47	4.75	1N	5D	
Soil Stabilizer (P & H or Similar)	16.92	4.75	1N	5D	
Spray Curing Machine-Concrete	16.92	4.75	1N	5D	
Spreader Box (Self-Propelled)	17.47	4.75	1N	5D	
Spreader Machine	16.12	4.75	1N	5D	
Steam Cleaner	16.92	4.75	1N	5D	
Straddle Buggy (Ross & Similar)	17.62	4.75	1N	5D	
Surface Heater & Planner Machine	18.02	4.75	1N	5D	
Trenching Machines (7 ft Depth & Over)	16.92	4.75	1N	5D	
Tractor (Farm-type R/T With Attachments)	17.47	4.75	1N	5D	
Tractor (To D-6 or Equivalent) & Traxcavator	18.02	4.75	1N	5D	
Tractor (D-6/Equivalent & Over)	17.47	4.75	1N	5D	
Traverse Finishing Machine	17.62	4.75	1N	5D	
Trenching Machines (Under 7 ft. Depth)	18.02	4.75	1N	5D	
Tug Boat Operator	16.92	4.75	1N	5D	
Tugger Operator	17.47	4.75	1N	5D	
Turnhead Operator	17.62	4.75	1N	5D	
Turnhead (With Re-Screening)	17.62	4.75	1N	5D	
Vacuum Drill (Reverse Circulation Drill)	16.62	4.75	1N	5D	
Welding Machines	18.27	4.75	1N	5D	
Whirleys & Hammerheads, All					
**** POWER EQUIPMENT OPERATORS - UTILITIES CONSTRUCTION**					
All Classifications	15.85	4.35	1		

CLASSIFICATION	HOURLY WAGE RATE	HOURLY FRINGE BENEFITS	(SEE BENEFIT CODE KEY) OVER TIME CODE	HOLIDAY CODE	NOTE CODE
** POWER LINE CLEARANCE TREE TRIMMERS					
Chipperman	12.90	3.50	4A	5A	
Spray Man	12.90	3.50	4A	5A	
Tree Trimmer	16.12	4.31	4A	5A	
Tree Trimmer Groundman	11.30	3.45	4A	5A	
Journey-level in Charge	18.67	4.40	4A	5A	
** REFRIGERATION AND AIR CONDITIONING MECHANIC					
All Classifications	20.32	0.00	1		
** RESIDENTIAL CONSTRUCTION					
Res. Carpenters	11.85	3.50	1		
Res. Communication Tech.	12.07	0.00	1		
Res. Drywall Tapers	16.29	0.00	1		
Res. Electricians	9.17	1.83	1		
Res. Electronic Tech.	12.07	0.00	1		
Res. Insulation Appl.	10.00	0.00	1		
Res. Laborers	10.85	0.00	1		
Res. Painters	7.50	0.00	1		
Res. Sheet Metal Mech.	16.65	4.15	1		
Res. Terrazzo Setter	12.29	3.66	1		
Res. Tile Setter	12.29	3.66	1		
Res. Terrazzo/ Tile Finisher	10.27	3.60	1		
** ROOFERS AND WATERPROOFERS					
Roofer	15.75	4.20	1M	5I	
Roofer - Using Irritable Material	17.75	4.20	1M	5I	
** SHEET METAL WORKERS					
Sheet Metal Mechanic	18.73	5.16	1Y	5A	
** SIGN HANGERS					
Sign Person	13.26	0.65	1		
** SIGN MAKERS AND INSTALLERS (ELECTRICAL)					
Sign Person	13.26	0.65	1		
** SOFT FLOOR LAYERS					
Journey Level	15.79	0.00	1		
** SOLAR CONTROLS FOR WINDOWS					
All Classifications	5.45	0.00	1	5T	8C
** SPRINKLER FITTERS - FIRE PREVENTION					
Journey Level	19.71	0.00	1		
** STAGE RIGGING MECHANICS					
Mechanic	10.50	2.73	1		
** SURVEYORS					
Chain Person	9.25	0.00	1		
Instrument Person (Junior Engineer)	12.05	0.00	1		
Party Chief	15.05	0.00	1		

CLASSIFICATION	HOURLY WAGE RATE	HOURLY FRINGE BENEFITS	(SEE BENEFIT CODE KEY) OVER TIME CODE	HOLIDAY CODE	NOTE CODE
** TELEPHONE LINE CONSTRUCTION - OUTSIDE					
Cable Splicer - Telephone Lineman	17.19	2.27	1B	5A	
Special Apparatus Installer I	17.19	2.27	1B	5A	
Special Apparatus Installer II	16.78	2.25	1B	5A	
Installer - Repairman	16.36	2.24	1B	5A	
Telephone Equipment Operator - Heavy	17.19	2.27	1B	5A	
Telephone Equipment Operator - Light	15.79	2.22	1B	5A	
Journey Level Telephone Lineman	15.79	2.22	1B	5A	
Hole Digger, Groundman	8.40	2.00	1B	5A	
Tree Trimmer - Telephone Line	15.79	2.22	1B	5A	
Pole Sprayer	15.79	2.22	1B	5A	
T.V. System Technician	14.01	2.17	1B	5A	
T.V. Technician	12.32	2.12	1B	5A	
T.V. Lineman	11.32	2.09	1B	5A	
T.V. Groundman	7.85	1.99	1B	5A	
** TERRAZZO WORKERS AND TILE SETTERS					
Journey Level	16.79	4.46	4A	5A	
** TILE, MARBLE AND TERRAZZO FINISHERS					
Finisher	13.54	4.46	4A	5A	
** TRAFFIC CONTROL STRIPERS					
Journey Level	18.14	2.92	1K	5A	
** TRUCK DRIVERS					
A-Frame	18.00	4.69	1I	5D	
Ambulance Driver	17.60	4.69	1I	5D	
Auto Crane: 2000 Lb. Capacity	17.70	4.69	1I	5D	
Buggymobile & Similar	17.70	4.69	1I	5D	
Bulk Cement Spreader	17.70	4.69	1I	5D	
Burner, Cutter & Welder	18.00	4.69	1I	5D	
Employee Haul	15.16	4.69	1I	5D	
Dumptor: 6 yd & Under	17.70	4.69	1I	5D	
Dumptor: Over 6 yds	18.10	4.69	1I	5D	
Dump, Semi-End	18.25	4.69	1I	5D	
Dump, 6 yds & under	17.70	4.69	1I	5D	
Dump, 6 - 12 yds	18.00	4.69	1I	5D	
Dump. Over 12 - 20 yds	18.10	4.69	1I	5D	
Dump, Over 20 - 40 yds	18.25	4.69	1I	5D	
Dump, Over 40 - 100 yds	18.74	4.69	1I	5D	
Dump, Over 100 yds	19.04	4.69	1I	5D	
Escort Driver or Pilot Car	15.16	4.69	1I	5D	
Fish Truck	17.60	4.69	1I	5D	
Flaherty Spreader, Box Driver	18.25	4.69	1I	5D	
Flatbed Truck	17.60	4.69	1I	5D	
Flatbed Truck With Hydraulic System	17.70	4.69	1I	5D	
Flowboys	18.25	4.69	1I	5D	
Fork Lift, 3000 Lbs And Under	17.60	4.69	1I	5D	
Fork Lift, 3001 - 16,000 Lbs	17.70	4.69	1I	5D	
Fork Lift, 16,000 & Over	18.25	4.69	1I	5D	
Fuel Truck Driver, Washer, Steam Cleaner	17.70	4.69	1I	5D	
Helicopter Pilot Hauling Employees or Materials	19.04	4.69	1I	5D	
Helper & Swamper	15.16	4.69	1I	5D	
Leverperson Loading Trucks At Bunkers	17.60	4.69	1I	5D	
Lowboy, 50 Tons & Under	18.10	4.69	1I	5D	
Lowboy, Over 50 Tons	18.25	4.69	1I	5D	
Mechanic, Field	18.25	4.69	1I	5D	
Mechanic, Shop	17.60	4.69	1I	5D	
Oil Distributor Driver (Road, Bootperson)	18.00	4.69	1I	5D	
Oil Tank Driver	17.70	4.69	1I	5D	
Power Boat Hauling Employees or Materials	15.16	4.69	1I	5D	
Power Operated Sweeper	17.70	4.69	1I	5D	

SPOKANE COUNTY

CLASSIFICATION	HOURLY WAGE RATE	HOURLY FRINGE BENEFITS	(SEE BENEFIT CODE KEY) OVER TIME CODE	HOLIDAY CODE	NOTE CODE
Rubber-Tired Tunnel Jumbo	17.70	4.69	1I	5D	
Scissors Truck	17.70	4.69	1I	5D	
Seeder & Mulcher	17.60	4.69	1I	5D	
Semi-Truck & Trailer	18.10	4.69	1I	5D	
Service Greaser	18.00	4.69	1I	5D	
Slurry Truck Driver	17.70	4.69	1I	5D	
Stationary Fuel Operator	17.60	4.69	1I	5D	
Straddle Carrier (Ross, Hyster & Similar)	17.70	4.69	1I	5D	
Tireperson	17.70	4.69	1I	5D	
Tournarocker, DW'S & Similar	18.25	4.69	1I	5D	
Tractor (Small Rubber-tired, Pulling Trailer)	17.60	4.69	1I	5D	
Tractor With Steer Trailer	18.10	4.69	1I	5D	
Transit Mix 3 - 6 yds	17.70	4.69	1I	5D	
Transit Mix 6 - 10 yds	18.10	4.69	1I	5D	
Transit Mix 10 - 20 yds	18.25	4.69	1I	5D	
Transit Mix Over 20 yds	18.74	4.69	1I	5D	
Truck-Mounted Crane	18.10	4.69	1I	5D	
Warehouse Person	18.00	4.69	1I	5D	
Warehouse Person, To Include Shipping & Receiving	17.70	4.69	1I	5D	
Water Tank Truck Up To 1800 Gallons	17.60	4.69	1I	5D	
Water Tank Truck 1801 - 6000 Gallons	17.70	4.69	1I	5D	
Water Tank Truck 6001 - 8000 Gallons	18.00	4.69	1I	5D	
Water Tank Truck 8001 - 10,000 Gallons	18.10	4.69	1I	5D	
Water Tank Truck 10,001 - 14,000 Gallons	18.25	4.69	1I	5D	
Wrecker & Tow Truck	17.70	4.69	1I	5D	
** WELL DRILLERS					
Irrigation Pump Installers	11.15	0.00	1		
Oiler	9.20	0.00	1		
Well Driller	11.15	0.00	1		

BENEFIT CODE KEY
EFFECTIVE 03-03-93

****

OVERTIME CODES.

1. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

   A. ALL HOURS WORKED ON SATURDAYS, SUNDAYS AND HOLIDAYS SHALL ALSO BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

   B. ALL HOURS WORKED ON SATURDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

   C. ALL HOURS WORKED ON SUNDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

   D. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

   E. ALL HOURS WORKED ON SATURDAYS (EXCEPT MAKEUP DAYS), SUNDAYS AND HOLIDAYS SHALL ALSO BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

   F. ALL HOURS WORKED ON SATURDAYS, SUNDAYS AND HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

   G. ALL HOURS WORKED ON SATURDAY AND SUNDAY (EXCEPT MAKEUP DAY) SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

   H. ALL HOURS WORKED ON SATURDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE, IN ADDITION TO THE REGULAR HOLIDAY PAY.

   I. ALL HOURS WORKED ON SATURDAYS AND SUNDAYS (EXCEPT MAKEUP DAYS DUE TO INCLEMENT WEATHER) SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

   J. THE FIRST EIGHT (8) HOURS ON SATURDAY SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS ON SATURDAY, AND ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

   K. ALL HOURS WORKED ON SATURDAYS AND SUNDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

   L. ALL HOURS WORKED ON SATURDAYS (EXCEPT AS A MAKEUP DAY) SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE, IN ADDITION TO THE REGULAR HOLIDAY PAY.

   M. ALL HOURS WORKED ON SATURDAYS (EXCEPT MAKEUP DAYS IF WORK IS LOST DUE TO INCLEMENT WEATHER CONDITIONS) SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

   N. ALL HOURS WORKED ON SATURDAYS (EXCEPT MAKEUP DAYS) SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

   O. ALL HOURS WORKED ON SATURDAYS (EXCEPT FOR MAKEUP DAYS) SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

   P. ALL HOURS WORKED ON SATURDAYS AND SUNDAYS (EXCEPT MAKEUP DAYS) SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

   Q. ALL HOURS WORKED ON SATURDAYS (EXCEPT FOR MAKE-UP DAYS DUE TO INCLEMENT WEATHER) AND ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS, SHALL BE PAID AT ONE AND ONE HALF TIMES THE HOURLY RATE OF WAGE.

R. ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE.

S. ALL HOURS WORKED ON SATURDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE PLUS HEALTH AND WELFARE AND VACATION. ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE PLUS HEALTH AND WELFARE AND VACATION.

T. ALL HOURS WORKED ON SATURDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE. FOR ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK AND FOR ALL HOURS WORKED ON SATURDAYS, SUNDAYS AND HOLIDAYS, THE HEALTH & WELFARE, AND VACATION BENEFITS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE. PENSION AND TRAINING SHALL BE PAID AT THE REGULAR HOURLY RATE.

U. ALL HOURS WORKED ON SATURDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS (EXCEPT LABOR DAY) SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON LABOR DAY SHALL BE PAID AT THREE TIMES THE HOURLY RATE OF WAGE.

V. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT THE PREVAILING HOURLY RATE OF WAGE IN ADDITION TO THE HOLIDAY PAY.

W. ALL HOURS WORKED ON SATURDAYS AND SUNDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. SATURDAYS AND SUNDAYS MAY BE WORKED AS A MAKE-UP DAY AT THE PREVAILING HOURLY RATE OF WAGE (NO OVERTIME) WHEN WORK IS LOST DUE TO ANY REASON BEYOND THE EMPLOYER'S CONTROL. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE.

X. ALL HOURS WORKED ON SATURDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE PLUS ONE AND ONE-HALF TIMES THE VACATION, HEALTH, WELFARE AND DENTAL BENEFITS. ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE PLUS TWO TIMES THE VACATION, HEALTH, WELFARE AND DENTAL BENEFITS.

Y. ALL HOURS WORKED ON SATURDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE. WHERE CONDITIONS REQUIRE WORK TO BE DONE ON SATURDAY, THE WORK WEEK MAY BE TUESDAY THROUGH SATURDAY.

Z. THE FIRST EIGHT HOURS ON THE FIRST SHIFT ON SATURDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL OTHER HOURS WORKED ON SATURDAYS AND ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE.

2. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

A. THE FIRST SIX (6) HOURS ON SATURDAY SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED IN EXCESS OF SIX (6) HOURS ON SATURDAY AND ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE.

B. ALL HOURS WORKED ON SATURDAYS (EXCEPT WHEN WORKED AS A MAKE-UP DAY) SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE, PLUS HOLIDAY PAY (IF ELIGIBLE).

C. THE FIRST TEN HOURS WORKED ON SATURDAY SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED IN EXCESS OF ELEVEN HOURS PER DAY, MONDAY THROUGH FRIDAY, ALL HOURS WORKED IN EXCESS OF TEN HOURS ON SATURDAYS, AND ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE.

D. ALL HOURS WORKED ON SATURDAY SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE, IN ADDITION TO THE REGULAR STRAIGHT-TIME PAY FOR HOLIDAYS.

E. ALL HOURS WORKED ON SATURDAYS OR HOLIDAYS (EXCEPT LABOR DAY) SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS OR ON LABOR DAY SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE.

F. ALL HOURS WORKED IN EXCESS OF FIVE (5) DAYS SHALL ALSO BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. OVERTIME FOR OVER FIVE (5) DAYS MAY BE WORKED A STRAIGHT TIME BY MUTUAL AGREEMENT IN WRITING.

G. ALL HOURS WORKED ON SUNDAYS SHALL BE PAID AT TWO AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE, IN ADDITION TO THE REGULAR STRAIGHT-TIME PAY FOR HOLIDAYS.

H. ALL HOURS WORKED ON SUNDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE, INCLUDING THE HOLIDAY PAY.

I. ALL HOURS WORKED ON SUNDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON PAID HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE, INCLUDING THE HOLIDAY PAY. ALL HOURS WORKED ON UNPAID HOLIDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

J. ALL HOURS WORKED ON SUNDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON PAID HOLIDAYS SHALL BE PAID AT TWO AND ONE-HALF TIMES THE HOURLY RATE OF WAGE, INCLUDING THE HOLIDAY PAY. ALL HOURS WORKED ON UNPAID HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE.

K. ALL HOURS WORKED ON SATURDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON SUNDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE, IN ADDITION TO THE REGULAR STRAIGHT-TIME PAY FOR HOLIDAYS. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY SHALL BE PAID AT THREE TIMES THE HOURLY RATE OF WAGE.

L. ALL HOURS WORKED ON SUNDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT TWO TIMES THE HOURLY RATE OF WAGE, IN ADDITION TO THE REGULAR STRAIGHT-TIME PAY FOR HOLIDAYS.

M. ALL HOURS WORKED ON SATURDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

N. ALL HOURS WORKED ON HOLIDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE, IN ADDITION TO THE HOLIDAY PAY.

O. ALL HOURS WORKED ON SUNDAYS AND HOLIDAYS SHALL BE PAID AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

4. ALL HOURS WORKED IN EXCESS OF EIGHT (8) HOURS PER DAY OR FORTY (40) HOURS PER WEEK SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

A. ALL HOURS WORKED ON SATURDAYS, SUNDAYS AND HOLIDAYS SHALL BE PAID AT DOUBLE THE HOURLY RATE OF WAGE.

HOLIDAY CODES

5. A. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, FRIDAY AFTER THANKSGIVING DAY, AND CHRISTMAS DAY (7).

B. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, FRIDAY AFTER THANKSGIVING DAY, THE DAY BEFORE CHRISTMAS, AND CHRISTMAS DAY (8).

C. HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE FRIDAY AFTER THANKSGIVING DAY, AND CHRISTMAS DAY (8).

D. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE FRIDAY AND SATURDAY AFTER THANKSGIVING DAY, AND CHRISTMAS DAY (8).

E. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE FRIDAY AFTER THANKSGIVING DAY, CHRISTMAS DAY, AND PRESIDENTIAL ELECTION DAY (8).

F. HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, PRESIDENTIAL ELECTION DAY, THANKSGIVING DAY, THE FRIDAY AFTER THANKSGIVING DAY, AND CHRISTMAS DAY (9).

G. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE LAST WORK DAY BEFORE CHRISTMAS DAY, AND CHRISTMAS DAY (7).

H. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, THANKSGIVING DAY, THE DAY AFTER THANKSGIVING DAY, AND CHRISTMAS (6).

I. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, AND CHRISTMAS DAY (6).

J. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE FRIDAY AFTER THANKSGIVING DAY, DECEMBER 24TH, CHRISTMAS DAY, AND DECEMBER 31ST (9).

K. HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, CHRISTMAS DAY, AND A DAY OF THE EMPLOYEE'S CHOICE (7).

L. HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING, THE FRIDAY AFTER THANKSGIVING DAY, THE DAY BEFORE CHRISTMAS DAY, AND CHRISTMAS DAY (9).

M. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE FRIDAY AFTER THANKSGIVING DAY, THE DAY BEFORE CHRISTMAS DAY, AND CHRISTMAS DAY (8).

N. HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, VETERANS' DAY, THANKSGIVING DAY, THE FRIDAY AFTER THANKSGIVING DAY, AND CHRISTMAS DAY (9).

O. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, AND CHRISTMAS DAY (6).

P. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE FRIDAY AFTER THANKSGIVING DAY, AND CHRISTMAS DAY (8).

Q. PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, AND CHRISTMAS DAY (6).

R. PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE LAST WORK DAY BEFORE CHRISTMAS DAY, AND CHRISTMAS DAY (7).

S. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, AND CHRISTMAS DAY (6). HOLIDAYS WORKED ON AN EMPLOYEE'S REGULARLY ESTABLISHED WORKDAYS SHALL BE COMPENSATED AT TWO AND ONE-HALF TIMES THE HOURLY RATE OF WAGE. HOLIDAYS WORKED ON AN EMPLOYEE'S REGULAR DAYS OFF SHALL BE COMPENSATED AT TWO TIMES THE HOURLY RATE OF WAGE. PART-TIME EMPLOYEES WORKING ON HOLIDAYS SHALL BE COMPENSATED AT ONE AND ONE-HALF TIMES THE HOURLY RATE OF WAGE.

T. PAID HOLIDAYS: SEVEN (7) PAID HOLIDAYS.

U. PAID HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, CHRISTMAS DAY, AND A DAY OF THE EMPLOYEES CHOICE (7).

V. PAID HOLIDAYS: SIX (6) PAID HOLIDAYS.

W. PAID HOLIDAYS: NINE (9) PAID HOLIDAYS.

X. HOLIDAYS: AFTER 520 HOURS - NEW YEAR'S DAY, THANKSGIVING DAY AND CHRISTMAS DAY. AFTER 2080 HOURS - NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, CHRISTMAS DAY AND A FLOATING HOLIDAY (8).

Y. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, PRESIDENTIAL ELECTION DAY, THANKSGIVING DAY, THE FRIDAY FOLLOWING THANKSGIVING DAY, AND CHRISTMAS DAY (8).

Z. PAID HOLIDAYS: EIGHT (8) PAID HOLIDAYS.

6. A. PAID HOLIDAYS: NEW YEAR'S DAY, THE DAY BEFORE OR THE DAY AFTER NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE DAY AFTER THANKSGIVING DAY, CHRISTMAS DAY, AND THE DAY BEFORE OR THE DAY AFTER CHRISTMAS DAY (10).

B. HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE DAY AFTER THANKSGIVING DAY, THE DAY BEFORE CHRISTMAS DAY, CHRISTMAS DAY, AND THE DAY BEFORE NEW YEAR'S DAY (9).

C. HOLIDAYS: NEW YEAR'S DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE DAY AFTER THANKSGIVING DAY, THE LAST WORK DAY BEFORE CHRISTMAS DAY, AND CHRISTMAS DAY (9).

D. HOLIDAYS: NEW YEAR'S DAY AND THE FRIDAY AFTER THANKSGIVING DAY (2). PAID HOLIDAYS: MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS DAY (5).

E. HOLIDAYS: NEW YEARS DAY, MEMORIAL DAY, LAST MONDAY IN MAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, FRIDAY AND SATURDAY AFTER THANKSGIVING DAY AND CHRISTMAS DAY (9).

F. HOLIDAYS: NEW YEARS DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, ARMISTICE DAY, THANKSGIVING DAY, FRIDAY AFTER THANKSGIVING DAY AND CHRISTMAS DAY (9).

G. HOLIDAYS: NEW YEARS DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, FRIDAY AFTER THANKSGIVING DAY AND CHRISTMAS DAY. PAID HOLIDAYS: PRESIDENT'S DAY.

H. HOLIDAYS: NEW YEAR'S DAY, MARTIN LUTHER KING JR DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE FRIDAY AFTER THANKSGIVING DAY, AND CHRISTMAS DAY (8).

I. PAID HOLIDAYS: NEW YEAR'S DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, FRIDAY AFTER THANKSGIVING DAY, AND CHRISTMAS DAY (7).

J. HOLIDAY: NEW YEAR'S DAY (1). PAID HOLIDAYS: MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, FRIDAY AFTER THANKSGIVING DAY, AND CHRISTMAS DAY (6).

K. HOLIDAYS: NEW YEAR'S DAY, FRIDAY AFTER THANKSGIVING DAY, AND CHRISTMAS DAY (3). PAID HOLIDAYS: MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, AND THANKSGIVING DAY (4).

L. PAID HOLIDAYS: MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, AND CHRISTMAS DAY (5).

M. PAID HOLIDAYS: THANKSGIVING AND CHRISTMAS. UNPAID HOLIDAYS: NEW YEARS DAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY AND THE DAY AFTER THANKSGIVING.

N. PAID HOLIDAYS: MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY AND CHRISTMAS DAY. UNPAID HOLIDAYS: NEW YEARS DAY AND THE DAY AFTER THANKSGIVING DAY.

O. PAID HOLIDAYS: NEW YEARS DAY, WASHINGTON'S BIRTHDAY, MEMORIAL DAY, INDEPENDENCE DAY, LABOR DAY, THANKSGIVING DAY, THE DAY AFTER THANKSGIVING DAY, CHRISTMAS AND THE DAY AFTER CHRISTMAS.

P. PAID HOLIDAYS: MEMORIAL DAY, INDEPENDENCE DAY AND LABOR DAY. UNPAID HOLIDAYS: NEW YEARS DAY, THANKSGIVING DAY, THE DAY AFTER THANKSGIVING DAY AND CHRISTMAS DAY.

Q. PAID HOLIDAYS: NEW YEARS DAY, MEMORIAL DAY, INDEPENDENCE DAY, THANKSGIVING DAY, THE DAY AFTER THANKSGIVING DAY AND CHRISTMAS DAY. UNPAID HOLIDAY: PRESIDENTS' DAY.

NOTE CODES

8. A. ALL CLASSIFICATIONS, INCLUDING ALL APPRENTICES, REPORTING TO AN EMPLOYER'S DESIGNATED JOB HEADQUARTERS AND WORKING A MINIMUM OF FOUR (4) HOURS IN ANY ONE (1) DAY SHALL RECEIVE A PER DIEM ALLOWANCE OF TWENTY-FOUR DOLLARS ($24.00) IN ADDITION TO THE HOURLY WAGE AND FRINGE BENEFITS.

B. THE WAGE RATES AND DEPTH PREMIUMS ARE FOR SURFACE SUPPLIED DIVERS AND SCUBA DIVERS. THE STANDBY RATE OF PAY FOR DIVERS SHALL BE ONE-HALF TIMES THE DIVERS RATE OF PAY.

C. ONE (1) WEEK VACATION AFTER ONE (1) YEAR OF SERVICE. PART TIME EMPLOYEES (WORKING 20 HOURS OR LESS PER WEEK) ARE NOT ENTITLED TO RECEIVE ANY FRINGE BENEFITS.

E. ALL CLASSIFICATIONS, INCLUDING ALL APPRENTICES, REPORTING TO AN EMPLOYER'S DESIGNATED JOB HEADQUARTERS AND WORKING A MINIMUM OF FOUR (4) HOURS IN ANY ONE (1) DAY SHALL RECEIVE A PER DIEM ALLOWANCE OF TWENTY-FOUR DOLLARS ($24.00) IN ADDITION TO THE PREVAILING HOURLY RATE OF WAGE AND FRINGE BENEFITS.

F. FIVE (5) DAYS VACATION AFTER ONE YEAR OF SERVICE. TEN (10) DAYS VACATION AFTER THREE YEARS OF SERVICE.

G. $.25 PER HOUR VACATION AFTER ONE YEAR OF SERVICE. $.50 PER HOUR VACATION AFTER TWO YEARS OF SERVICE.

H. TWO (2) WEEKS VACATION AFTER ONE (1) YEAR OF SERVICE. PART TIME EMPLOYEES (WORKING 20 HOURS OR LESS PER WEEK) ARE NOT ENTITLED TO RECEIVE ANY FRINGE BENEFITS.

I. APPRENTICES BELOW 80% RECEIVE A PENSION CONTRIBUTION IN THE AMOUNT OF $.75. APPRENTICES 80% AND ABOVE RECEIVE A PENSION CONTRIBUTION IN THE AMOUNT OF $1.55.

J. NO WORK SHALL BE PERFORMED ON LABOR DAY OR CHRISTMAS DAY EXCEPT WHEN LIFE OR PROPERTY IS IN IMMINENT DANGER. SHOULD ANY OF THESE HOLIDAYS FALL ON SUNDAY, THE FOLLOWING MONDAY SHALL BE CONSIDERED A LEGAL HOLIDAY.

K. VETERANS DAY AND THE FRIDAY AFTER THANKSGIVING ARE OPTIONAL HOLIDAYS AND ARE PAID AT ONE AND ONE-HALF TIMES THE REGULAR RATE OF PAY ONLY WHEN WORKED.

L. FIVE (5) DAYS VACATION PER YEAR. NOTE: PART TIME EMPLOYEES (WORKING 20 HOURS OR LESS PER WEEK) ARE NOT ENTITLED TO RECEIVE ANY FRINGE BENEFITS.

M. FIVE (5) DAYS VACATION AFTER ONE YEAR OF SERVICE, TEN (10) DAYS VACATION AFTER TWO YEARS OF SERVICE. NOTE: PART TIME EMPLOYEES (WORKING 20 HOURS OR LESS PER WEEK) ARE NOT ENTITLED TO RECEIVE ANY FRINGE BENEFITS.

N. MARBLE MASONS AND GRANITE MASONS RECEIVE AN ADDITIONAL $1.00 PER HOUR.

O. FIVE (5) DAYS VACATION AFTER ONE (1) YEAR.

Q. FIVE (5) DAYS VACATION PER YEAR. PART TIME EMPLOYEES (WORKING 20 HOURS OR LESS PER WEEK) ARE NOT ENTITLED TO RECEIVE ANY FRINGE BENEFITS.

R. FIVE (5) DAYS VACATION PER YEAR.

S. ONE WEEK VACATION AFTER ONE YEAR OF SERVICE. TWO WEEKS VACATION AFTER THREE YEARS OF SERVICE. THREE WEEKS VACATION AFTER NINE YEARS OF SERVICE.

T. TWO WEEKS VACATION FOR ONE TO THREE YEARS OF SERVICE. FOUR WEEKS VACATION FOR THREE TO SIX YEARS OF SERVICE. SIX WEEKS VACATION FOR SIX OR MORE YEARS OF SERVICE.

U. THE PREVAILED VACATION AMOUNT REPRESENTS THE COST TO A CONTRACTOR OR SUBCONTRACTOR WHICH MAY BE REASONABLY ANTICIPATED IN PROVIDING THE FOLLOWING VACATION PLAN: ONE WEEK AFTER ONE YEAR TWO WEEKS AFTER TWO YEARS. THREE WEEKS AFTER EIGHT YEARS. FOUR WEEKS AFTER SIXTEEN YEARS. TWELVE HUNDRED HOURS MUST BE WORKED IN A YEAR'S TIME TO BE ELIGIBLE.